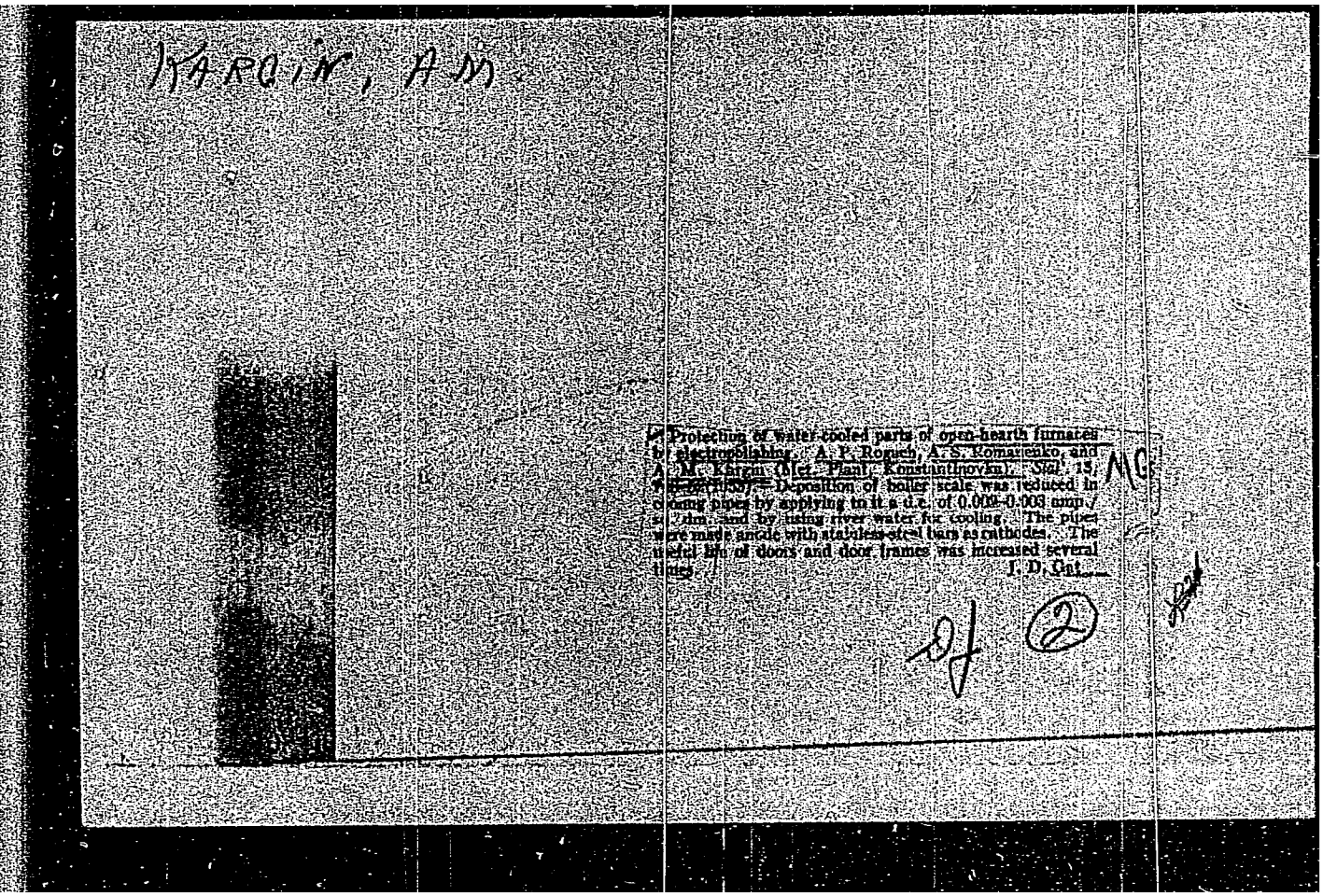


Protection of water-cooled parts of open-hearth furnaces by electropolishing. A. P. Roguch, A. S. Komarenko, and A. M. Kargin. (Metallurg. Konstantinovka). *Stal'*, 15, [illegible]. Deposition of boiler scale was reduced in cooling pipes by applying to it a d.c. of 0.002-0.003 amp./sq. dm. and by using river water for cooling. The pipes were made anode with stainless-steel bars as cathodes. The useful life of doors and door frames was increased several times. J. D. Gut

USSR

Gel structure. VII. Globulization of rubbers by halogenation of dilute solutions. P. I. Zubov, Z. N. Zhurkina, and V. A. Kargin (L. Ya. Karpov Sci. Research Inst. Phys. Chem., Moscow). *Kolloid. Zhur.* 17, 31-9(1955); cf. 49, 7283a.—The viscosity, η, of solns. (e.g., 0.10%) of natural rubber (I) in $CHCl_3$ or CH_2Cl_2 was lowered, e.g., tenfold, when 30 wt. % I_2 was added, while further additn. of I_2 had no effect on η. In the absence of air, the depression of η by I_2 was smaller. I_2 had little or no effect on the η of butadiene rubber, with or without air. As it was believed that the decrease of η was caused by globulization of I, electron micrographs were taken; they showed aggregates of about 1 μ in I and dense particles of about 0.01 μ in I + I_2.

J. J. Bikerman

31

KARGIN, V.A.

V. Electron-microscopic study of alumina-silica gels. Z. Ya. Berestneva and V. A. Kargin (L. Ya. Karpov Inst. Phys. Chem., Moscow). *Kolloid. Zhur.* 17, 196-9(1955); cf. *C.A.* 46, 2378f. Gels (I) prepd. by mixing 0.1*N* $Al(NO_3)_3$ with 0.1*N* Na silicate in various proportions showed spheres (of, apparently, an Al silicate) which remained amorphous for 2 yrs. Gels (II) prepd. by mixing sols of Al_2O_3 and SiO_2 contained sep. particles of Al_2O_3 and SiO_2. I, after heating to 800°, formed honeycomb structures similar to those of a clay from the bottom of the Bering Straits. II gave a microcryst. pattern after treatment at 800°. Also in *Colloid J. U.S.S.R.* 17, 181-4(1955)(Engl. translation).
J. J. Bikerman

KARGIN, V. A.

11

V Study of the structure of novolak resins fixed with hexamethylenetetramine. L. A. Igonin, N. A. Krasulina, and V. A. Kargin (L. Ya. Karpov Sci. Research Phys.-Chem. Inst., Moscow). *Kolloid. Zhur.* 17, 295–8(1955).—Product of condensation of 6 moles PhOH with 5 moles CH_2O of mol. wt. 350–400 was mixed with x% hexamethylenetetramine (I) in EtOH, the soln. was evapd. and the residue compressed to a tablet. The increase in the deformability of these tablets with temp. was rapid at $x < 2\%$, i.e. resins contg. little I became viscoplastic at higher temps. (e.g., 60°), while the deformability of resins with $x > 3\%$ little depended on temp. between 100° and 200°. PhOH and dioctyl sebacate are plasticizers of these resins. In the condensation of PhOH-CH_2O resins with I, linear chains with unfrequent cross linkages form; they are imbedded in the viscous mass of the low-mol. resin. J. J. Bikerman

Structural analysis of novolaks. C. Boelhouwer, H. I. Waterman and P. H. W. Wilmands (Tech. Univ., Delft, Neth.). *J. Polymer Sci.* 17, 411–16(1955).—The structures of certain novolaks, prepd. by polycondensation of HCHO with phenol, *p*-cresol, and *m*-cresol, resp., were investigated. The novolaks were transformed into satd. hydrocarbons, thus expelling O by a relatively mild high-pressure hydrogenation (300°, 250 atm.) by using 100% by wt. of Ni-Cu on kieselguhr catalyst. It can be expected that this treatment does not alter the structural frame of the mols. From ultimate analysis and phys. consts. of the hydrocarbons, conclusions were made as to the structure of the novolaks. They are linear thermoplasts; no extra rings are present.

N. J. Petrella

KARGIN, V. A.

Setting of urea-formaldehyd resins. B. M. Kovarskaya, G. L. Slonimskii, and V. A. Kargin (Sci. Research and Proj. Inst. Plastics, Moscow). *Kolloid. Zhur.* 17, 423-33 (1955); cf. *C.A.* 50, 3709b.—Urea-formaldehyde resins (not further characterized) pass 3 stages during setting. During stage 1, the resin is a liquid fully sol. in H_2O and freezing to a glass at 0° to −5°. During stage 2, it contains 40–50% H_2O, is only partially sol. in H_2O and alcs., is glassy below 0° and freely flowing above 60°; as it has no yield stress, it probably contains only linear chains longer than those of the first stage. During stage 3, the resin is solid but, probably, still consists of linear polymers, since resins plasticized with $C_3H_8O_3$ (e.g., 20%) become viscous liquids on heating (e.g., to 180°). J. J. Bikerman

KARGIN, V.A.

AID P - 2753

Subject : USSR/Chemistry

Card 1/1 Pub. 119 - 1/6

Authors : Berestneva, Z. Ya. and V. A. Kargin (Moscow)

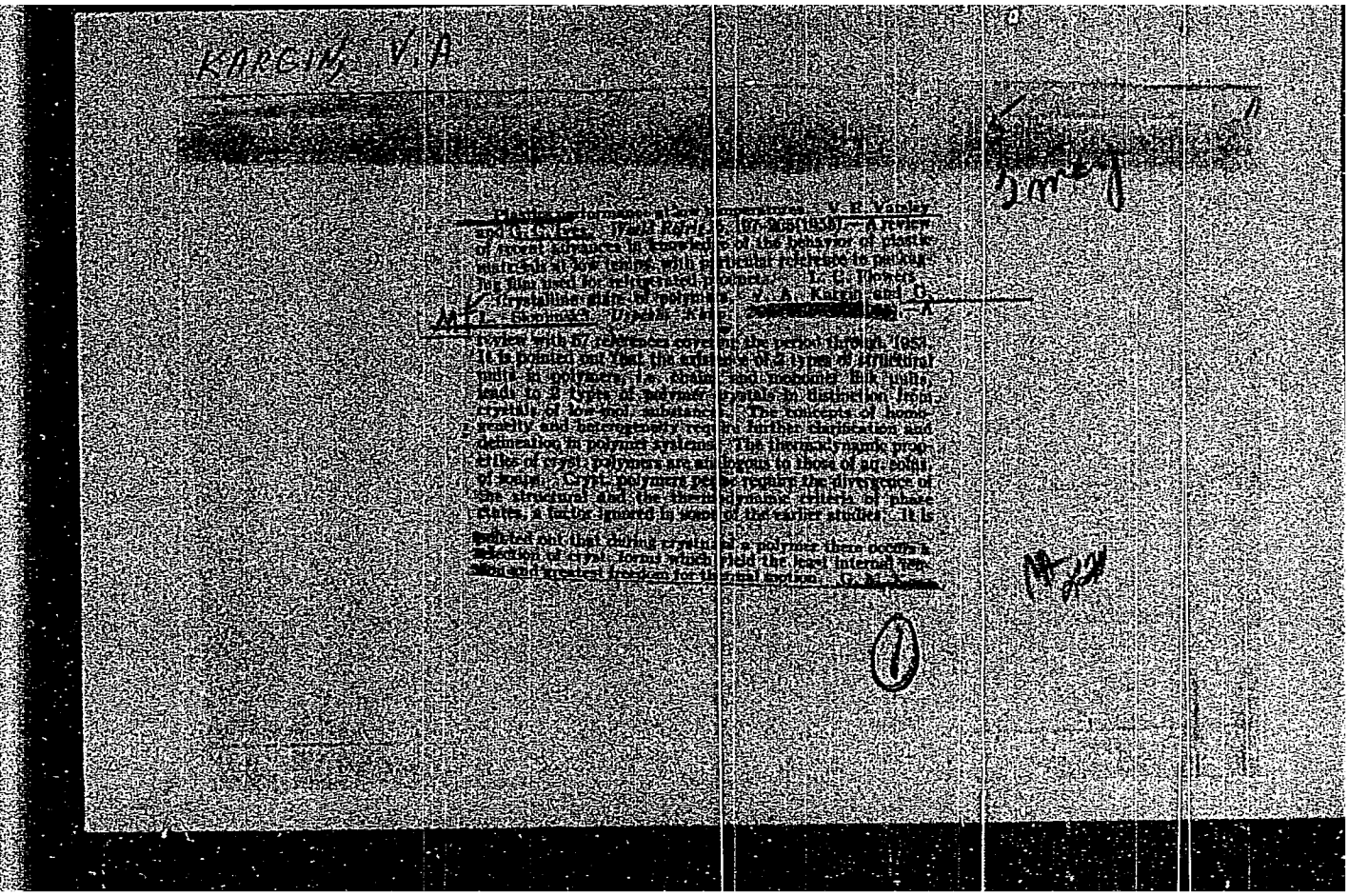
Title : Mechanism of formation of colloidal particles

Periodical : Usp. khim. 24, 3, 249-259, 1955

Abstract : The formation of colloidal particles proceeds in two stages: 1) Formation of amorphous particles, spherical or shapeless; and 2) Formation of a great number of small crystals due to crystallization occuring in the particles. Experiments with sols of titanium dioxide, silicic acid, arsenous sulfide, aluminum hydroxide, vanadium pentoxide, and gold are described. 24 photos, 53 references (31 Russian: 1902-1953)

Institution : None

Submitted : No date



KARGIN, V.A.

[illegible] study of polymers. III. A study of structure changes of crystalline and amorphous polymers with the temperature. V. A. Kargin and G. S. Markova (L. Ya. Karpov Inst. Phys. Chem., Moscow). Zhur. Fiz. Khim. 27, [illegible] (1953); cf. C.A. [illegible].—Samples of polyethylene, gutta-percha, polyamide (from hexamethylenediamine and adipic acid), poly(methyl methacrylate), polystyrene, and poly(vinyl chloride) were studied [illegible] at different temps. A phase transformation was observed in all the cryst. polymers studied, but the absence of phase transformation was confirmed in poly(methyl methacrylate), polystyrene, and poly(vinyl chloride) at temps. above the softening point of the polymers. An accumulation of many reflections on the diffraction diagrams was observed at temps. close to the fusion of the polymer crystals, and the reversibility of the structure in the subsequent cooling. The results point to the specificity of the polymer crystal structure. W. M. Sternberg

KARGIN, V.A.

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 27/50

Authors : Kargin, V. A., Academician., and Gatovskaya, T. V.

Title : Effect of orientation on the sorption of crystalline polymers

Periodical : Dok. AN SSSR 100/1, 105-106, Jan. 1, 1955

Abstract : The role of the orientation processes in the derivation and reprocessing of high molecular compounds particularly during the derivation of highly stable fibrous and pellicular materials is elucidated. Experiments showed that the elongation of crystal polymer samples leads to a change in the sorption magnitude which indicates certain changes in their packing density during the orientation. Such sorption changes indicate a certain loosening in the packing density of polymeric molecules in the process of orientation in the case of polyamides and cannot be identically interpreted in the case of polyethylene. Three USSR references (1948-1953). Graphs.

Institution : The L. Ya. Karpov Phys.-Chem. Institute

Submitted : October 22, 1954

KARGIN, V.A.

USSR/Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 33/52

Authors : Kargin, V. A., Academician; Karpov, V. L.; Lipatov, Yu. S.; Markova, G. S.; and Koretskaya, T. A.

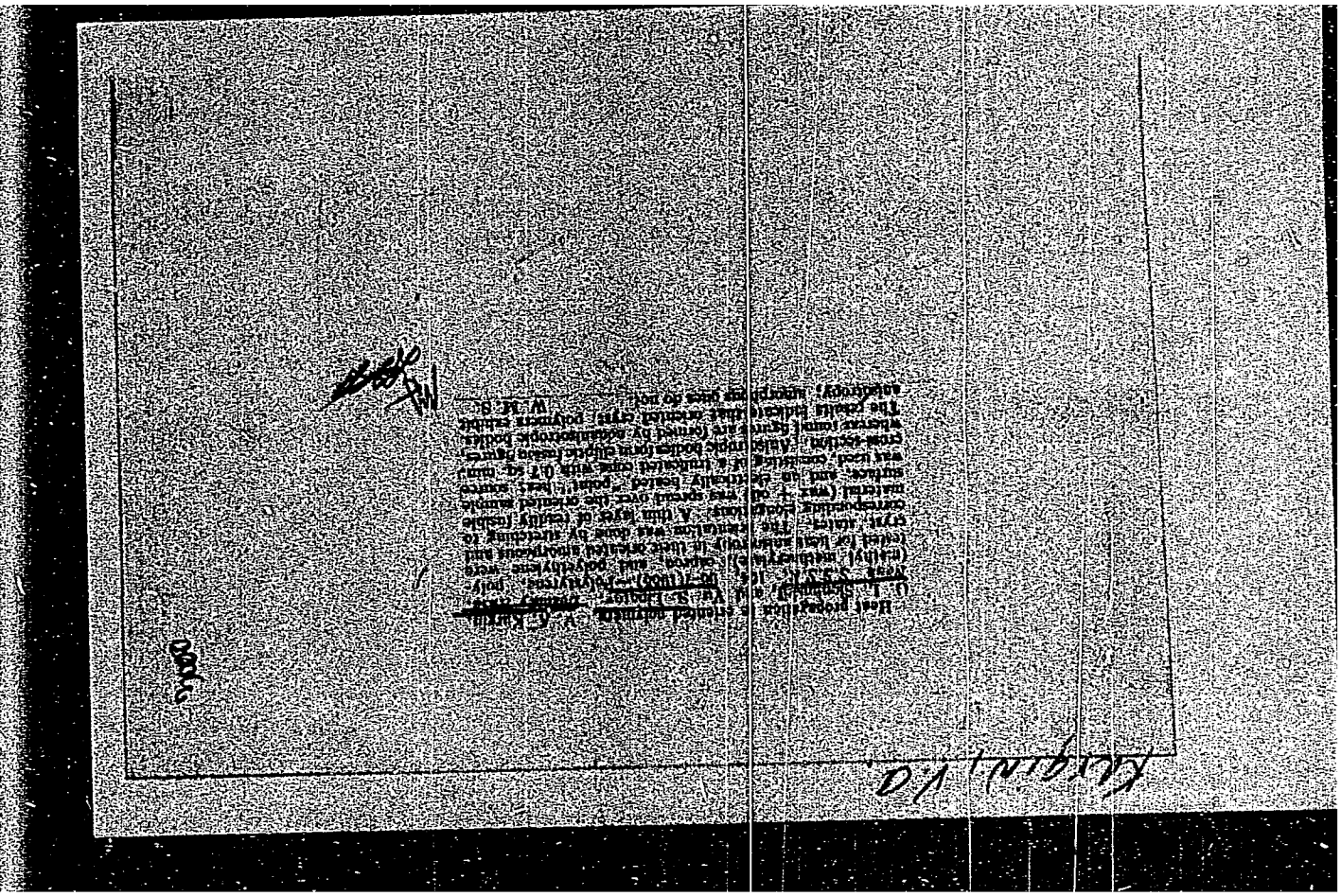
Title : About the phase condition of hydrate cellulose films

Periodical : Dok. AN SSSR 101/4, 707-709, Apr 1, 1955

Abstract : The phase condition of hydrate cellulose compounds obtained through three different methods was investigated by means of electrons with an energy of 90 kev. The existence of foreign crystalline inclusions in the cellulose films even after 3 days of thorough washing was established electronmicroscopically. A study of the entire conversion process - from isotropic, swollen hydrate cellulose into highly orderly arranged fibers - showed that the phase conversions do not affect the complete conversion process. The fact that cellulose compounds are amorphous was confirmed. Thirteen references: 10 USSR, 2 German and 1 USA (1917-1953). Table; illustrations.

Institution : .....

Submitted : November 11, 1954

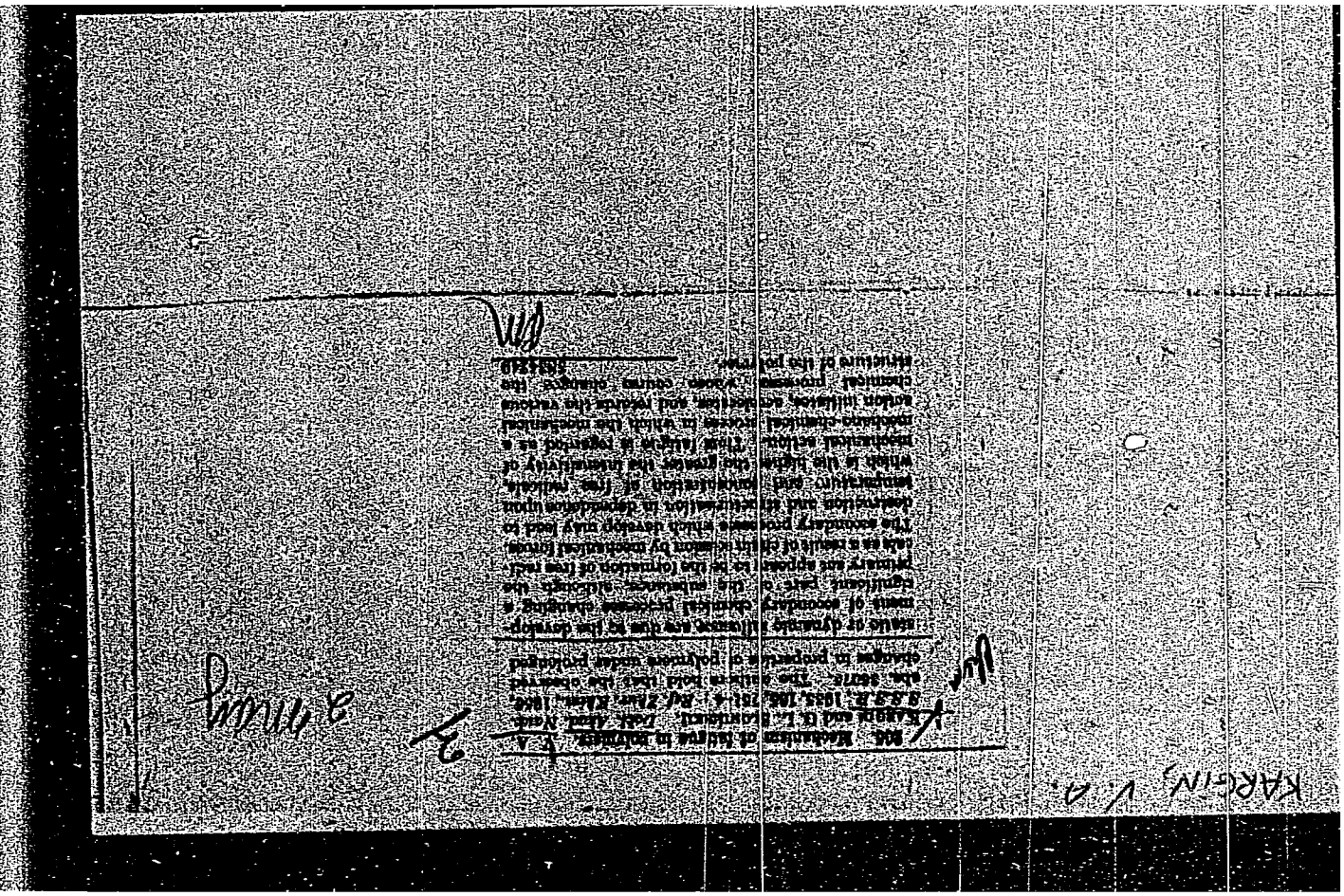


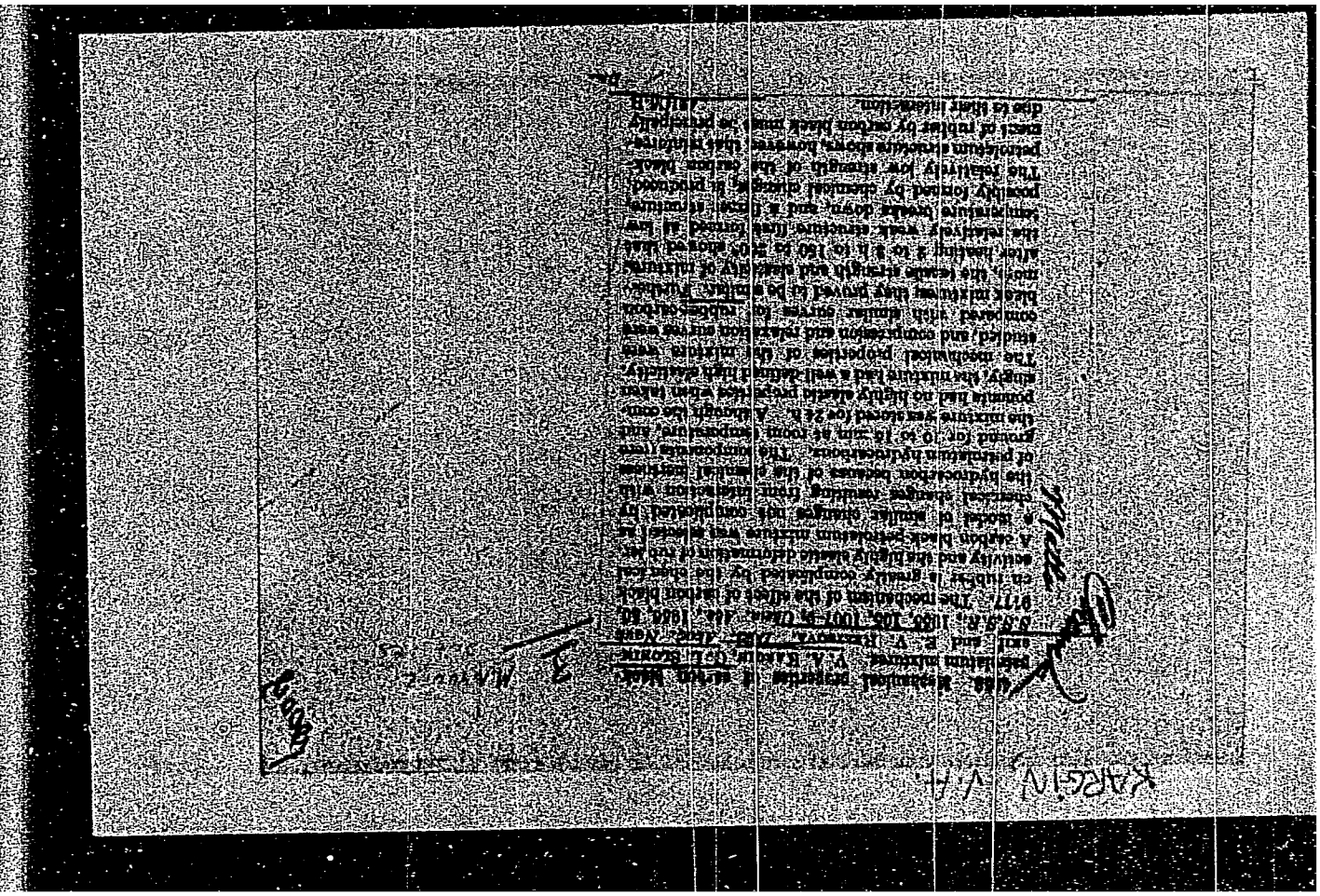
KARGIN, V.A., akademik; MATVEYEVA, T.A.

High voltage multi-chamber electrodialysis. Dokl. AN SSSR 105 (MLRA 9:3)
no.2:294-297 '55.

1. Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov.

(Electrodialysis)





REBINDER,P.A., akademik, otvetstvennyy redaktor; YERMOLENKO, N.F., otvetstvennyy redaktor; KARGIN, V.A., akademik, redaktor; DUMANSKIY, A.V., redaktor; DERYAGIN, B.V., redaktor; DOGADKIN, B.A., professor, redaktor; FUKS, G.I., redaktor; YEGOROV, N.G., redaktor izdatel'stva; MOSKVICHEVA, N.I., tekhnicheskiy redaktor

[Proceedings of the Third All-Union Conference on Colloidal Chemistry] Trudy Tret'ei Vsesoiuznoi konferentsii po kolloidnoi khimii. Moskva, Izd-vo Akademii nauk SSSR, 1956. 494 p. (MLRA 9:11)

1. Vsesoyuznaya konferentsiia po kolloidnoy khimii, 3d, Minsk, 1953. 2. Chlen-korrespondent AN SSSR (for Dumanskiy, Deryagin) 3. Deystvitel'nyy chlen AN SSSR (for Yermolenko)
(Colloids)

KARGIN, V. A.

Electrochemical study of the protective quality of lacquers. V. A. Kargin, M. I. Karyakina, and Z. Yu. Berestneva. *Khim. Prom.* 1950, 276-80.—An app. was constructed for the electrochem. testing of the surface-protective properties of lacquers. In view of the high lacquer elec. resistance, tests were made at high p.d., but with an automatically regulated c.d. of 1.8 ma./sq. cm. Extensive tests showed that the lacquer-protective action depended on the lacquer bonding to the metal, which is improved by a suitable metal surface preliminary treatment. An optimum lacquer film thickness always exists for best protection, which is also affected by the internal strains in the lacquer films.

W. M. Sternberg

3

KARGIN, V. A.

Thermomechanical study of the process of formation and of the structure of infusible and insoluble p-cresol-formaldehyde resins. L. A. Igonin, N. A. Krasulina, and V. A. Kargin (L. Ya. Karpov Inst. Phys. Chem., Moscow). Kolloid. Zhur. 18, [illegible] (1956); cf. C.A. 50, [illegible].—A resin made of 2 moles p-cresol and 1 mole HCOH had a temp. T of glassy state of 55°; after melting the resin with 2% or 10% $(CH_2)_6N_4$ T rose to 90° and 185°, resp. Addn. of 10% dioctyl sebacate (I) to the plastic made with 10% $(CH_2)_6N_4$ lowered T to 140°, while addn. of 30% I resulted in the appearance of a high-elastic state between 170° and 220°, and addn. of more I had the usual effect of plasticizers of amorphous linear polymers. During the reaction of resin with $(CH_2)_6N_4$ T gradually increased until it reached the reaction temp.; then the viscosity of the mass suddenly rose, the condensation stopped, and the compn. of the resulting plastic remained "frozen." J. J. Bikerman

KARGIN, V.A.

Structure of silver sols. I. M. Ratner, T. A. Koretskaya, and V. A. Kargin (Sci. Research Kino-Photo-Inst., Moscow). *Kolloid. Zhur.* 12, 408-9(1950); cf. *C.A.* 47, 5088.—Electron photomicrographs and electron diffraction patterns of Ag sols prepd. by reduction of satd. Ag_2O solns. with N_2H_4 and CH_2O showed that the particles were first amorphous and then crystd. in about 1 hr.

J. J. Bikerman

3

KARGIN, V.A.

CARD 1 / 2 PA - 1822

SUBJECT USSR / PHYSICS

AUTHOR ROGOVINA,A.A., DAVIDOVIČ,N.I., NEBYLICYN,B.F., NIKITIN,V.V., KARGIN,V.A.

TITLE The Study of the Behavior of Tire Tissues if Subjected to Percussion.
I. Pendulum-Ram for the Testing of Tissue-(Cord)Fibres.

PERIODICAL Žurn.techn.fis, 26, fasc.12, 2684-2689 (1956)
Issued: 1 / 1957

A large number of automobil tires are damaged after a very small mileage because the outer cover is destroyed by contact with some obstacle. In order to study the behavior of the tissue when subjected to such an impact, a pendulum-ram was constructed. The ballistic dynamometer by GUDBRANDT, which is usually used in practice, has a number of essential faults. These faults can be eliminated by separating the holding device from the pendulum. This may be attained in two ways: these impact tests were carried out on the stationary and immobile sample, which is held in a position vertical to the oscillation plane of the pendulum. The essential difference between the method of testing the tissue by means of a pendulum-ram on the one hand and that on the ballistic dynamometer on the other consists in the fact that, in the first case, the velocity of the deformation of the fibre grows during the process of expansion, whereas in the second case it remains nearly constant. The construction scheme and a photo of the pendulum ram is shown. The values obtained for elongation by tearing are more or less approximative values, because the actual amounts of these elonga-

KARGIN, V. A.

Category : USSR/Atomic and Molecular Physics - Physics of high-molecular substance D-9

Abs Jour : Ref Zhur - Fizika, No 1, 1957, No 1016

Author : Klimenkov, U.S., Kargin, V.A.
Title : Relaxation Properties of Synthetic Fibers

Orig Pub : Soobshch. o nauch. rabotakh Vses. khim. o-va im. Mendeleyeva, 1955, vyp. 3, 46-49

Abstract : See Ref. Zhur. Khim, 1956, 47173

Card : 1/1

KARGIN, V.A.

KARGIN, V.A.; KARYAKINA, M.I.; BERESTNEVA, Z.Ya.

The mechanism of protection of metals from corrosion by varnish coatings. Soob.o nauch.rab.chl.VKHO no.3:60-62 '55. (MIRA 10:10)
(Corrosion and anticorrosives) (Varnish and varnishing)

KARGIN, V.A.

USSR/Chemistry - Plastics

FD-2638

Card 1/1 Pub. 50-3/18

Authors : Academician Kargin, V. A.; Shteding, M. N., Cand Tech Sci

Title : Investigation with the aid of the thermomechanical method of the mechanism of ageing of polyvinylchloride

Periodical : Khim. prom. No 3, 137-141, Apr-May 1955

Abstract : Using the thermomechanical method (cf. Khim. prom. No 2, 74, 1955), investigated the effect of various external influences (presence of oxygen, temperature, irradiation, etc) on the ageing of polyvinylchloride.. Five references, all foreign. Four graphs, one table.

KARGIN, V. A.

USSR/Chemical Technology - Chemical Products and Their Application. Lacquers. Paints. Drying Oils. Siccatives, I-22

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63304

Author: Kargin, V. A., Sogolova, T. I., Karyakina, M. I.

Institution: None

Title: Stress Occurrences During Formation of Lacquer Films

Original Periodical: Khim. prom-st', 1955, No 7, 8-13

Abstract: Investigated were stresses in various lacquer- and paint coatings at temperatures of 20-180° which arise during film formation. At the initial time of drying when the film is still in viscous-flow condition perceptible stresses do not arise in the films; they increase appreciably after evaporation of a considerable portion of the solvent and maximum stresses occur during the period of cooling to room temperature which is due to different coefficients of linear expansion of film and support. Stresses arise on deposition of lacquer on hard, not-deformable support due to a decrease in volume of the film on

Card 1/2

USSR/Chemical Technology - Chemical Products and Their Application. Lacquers. Paints. Drying Oils. Siccatives, I-22

Abst Journal: Referat Zhur - Khimiya, No 19, 1956, 63304

Abstract: evaporation of solvents or occurrence of chemical reactions, and also at high temperatures of film formation with different coefficients of linear expansion of film and support. A method has been worked out for evaluating stresses from the curvature radius of metallic support.

Card 2/2

USSR/ Chemistry - Physical chemistry

Card 1/1 Pub. 22 - 40/63

Authors : Kargin, V. A., Academician; and Gatovskaya, T.A.

Title : Effect of crystallization on the sorption of hydrocarbons by natural rubber and guttapercha

Periodical : Dok. AN SSSR 99/6, 1037-1039, Dec 21, 1954

Abstract : Experimental data show that the sorption isotherms for amorphous and crsytalline natural rubber are practically identical, i.e., the presence of the crystalline phase does not change the sorptionability of the rubber. The observed difference between the sorption isotherm of natural rubber and that of guttapercha was found to be due not to the phase state but to the differnce in structure and flexibility of the chains. The thermodynamic activity and consequently the sorptionability of amorphous polymers were determined by the flexibility of the molecular chains. Seven refernces: 1-USA; 1-Swiss and 5-USSR (1935-1953). Graphs.

Institution: The L. Ya. Karpov Physico-Chemical Institute

Submitted: October 22, 1954

KARGIN, V.A.

Category : USSR/Atomic and Molecular Physics - Physics of high-molecular substance D-9

Abs Jour : Ref Zhur. - Fizika, No 1, 1957, No 1005

Author : Slonimskiy. G.L., Kargin.V.A., Buyko, G.N., Reztsova, Ye.V., L'yuis-Riyera. M.

Title : Concerning the Problem of the Mechanism of Rubber Fatigue

Orig Pub : Stareniye i utomleniye kauchukov i rezin i povysheniye ikh stoykosti. L., Goskhimizdat, 1955, 100-118

Abstract : See Ref. Zhur. Khim. 1956, 48630

Card : 1/1

FD-1800

USSR/Chemistry - High polymers

KARGIN, V.A.

Card 1/1 Pub 50-4/19

Author : Kargin, V. A., Academician; Shteding, M. N., Cand Tech Sci

Title : The thermomechanical method of investigating high polymers

Periodical : Khim. prom., No 2, 74-79 (10-15), Mar 1955

Abstract : On the basis of the experiments described, have compiled data on the physical and mechanical changes which high polymers (polyvinylchloride, polyisobutene, polystyrene, polyethylene, and polyamide resins) undergo in the temperature range minus 60° - plus 220°. Studied the effect of plasticizers on the behavior of the high polymers. Six references, 3 USSR, all since 1940. Ten graphs.

KARGIN, V. A.

USSR/Physical Chemistry

Card 1/1

Authors : Kargin, V. A. Academician; Malinskiy, Yu. M., and Medvedev, S. S. Memb. corresp. of the Acad. of Sc. USSR.

Title : Investigation of monomolecular polyacrylate films

Periodical : Dokl. AN SSSR, 96, Ed. 2. 307 - 309, May 1954

Abstract : The chain molecules of polyacrylates (as well as many other high polymers) are oriented flatwise over an aqueous surface, whereby the carbonyl atoms of oxygen are the "anchors" binding the macromolecule with the surface of the water and the side paraffinic chains "project" into the air. A solid mono-layer of the polycetylacrylate has a greater thickness than a mono-layer of polymethylacrylate and a smaller specific area. During compression of the solid mono-layer takes place the ejection of individual chain links. Three references; 2 USSR, Table.

Institution : .....

Submitted : March 18, 1954

KARGIN, V.A.

USSR/Chemistry - Saccharides

Card 1/1 Pub. 147 - 5/27

Authors : Ustanov, Kh. U., and Kargin, V.A.

Title : Sorption of water on melted glucose and caramel mass

Periodical : Zhur. fiz. khim. 28/2, 224-228, Feb 1954

Abstract : The sorption and desorption of water by amorphous glucose and caramel mass was investigated at 25 and 50° C and compared with the sorption and desorption of cellulose. In contrast to cellulose the glassy sugars at low relative vapor pressures do not adsorb any water. Sorption begins at a specific much higher vapor-pressure after which it increases continuously and reaches values exceeding that of cellulose. The greater water sorption by cellulose is due to the sturdy chains of its macromolecules which prevent diffusion of the water. The mechanism of water sorption by glassy sugars is explained. Three USSR references (1937-1952). Tables; graphs.

Institution : Academy of Sciences Uzbek-SSR, Chemical Institute, Tashkent

Submitted : April 1, 1953

Kargin, V. A.

62

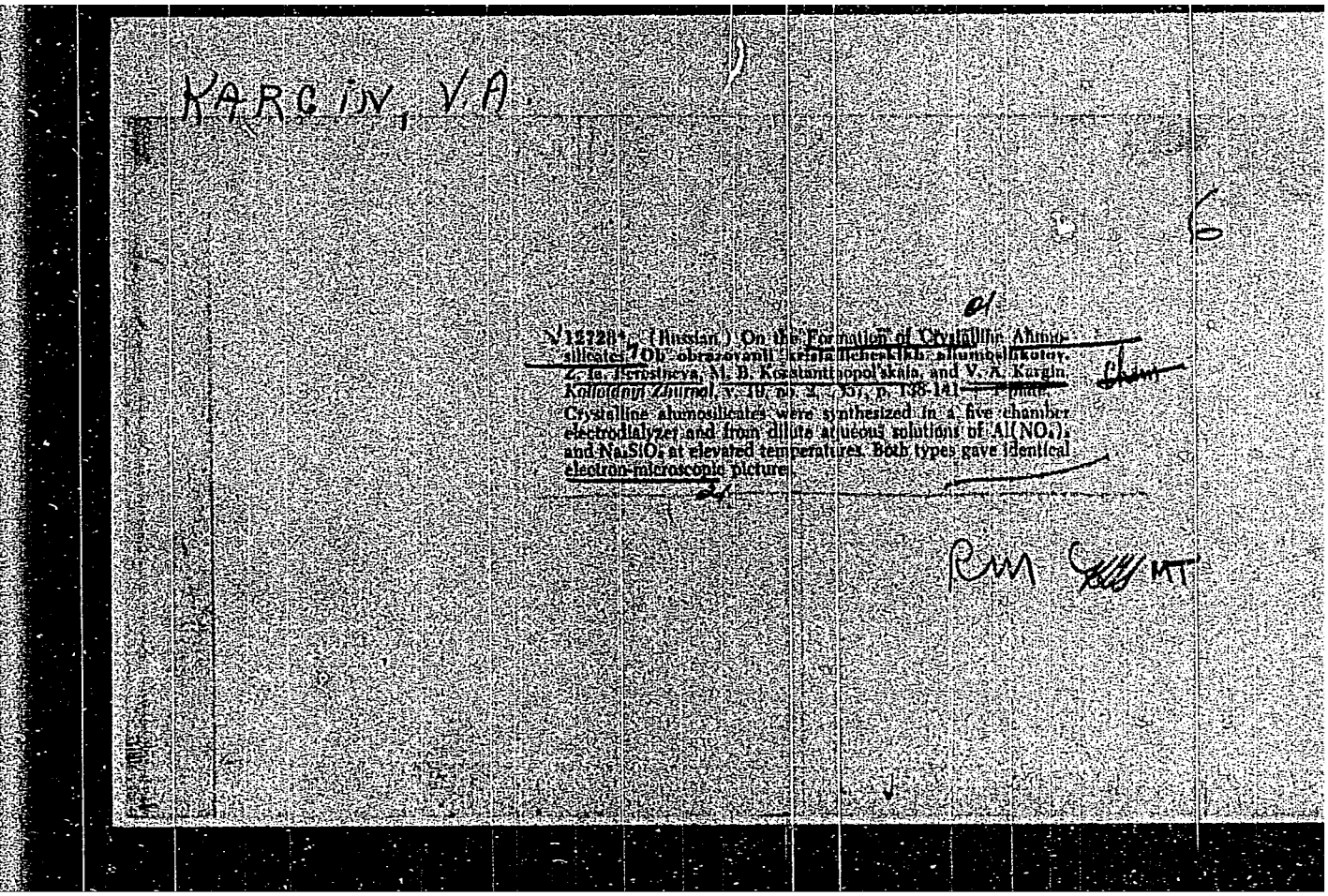
Investigation of light dispersion in high-polymers mixtures. S. S. Voyutskii, A. D. Zalonchkovskii, V. A. Kargin, and R. A. Reznikova. *Doklady Akad. Nauk S.S.S.R.* 94, 1093-6(1954).—The compatibility of polyvinyl chloride (I) and butadienenitrile (II) copolymers was investigated by the detn. of optical uniformity of the films. Films formed with perfectly compatible components should be completely optically uniform, while a dispersion of one component in the other forms microareas with different ns, and since such films disperse as well as transmit light, a turbidity becomes noticeable. The turbidity was measured with a Cs-Sb cell, and expressed as the percent of light dispersed to the total light transmitted (τ). The values of τ of I plasticized II pass through a max., while τ of I plasticized with dibutyl phthalate has no max. at any plasticizer concn. The turbidity of stretched plastics was also studied.

W. M. Sternberg

(3)

KARGIN, V.A.

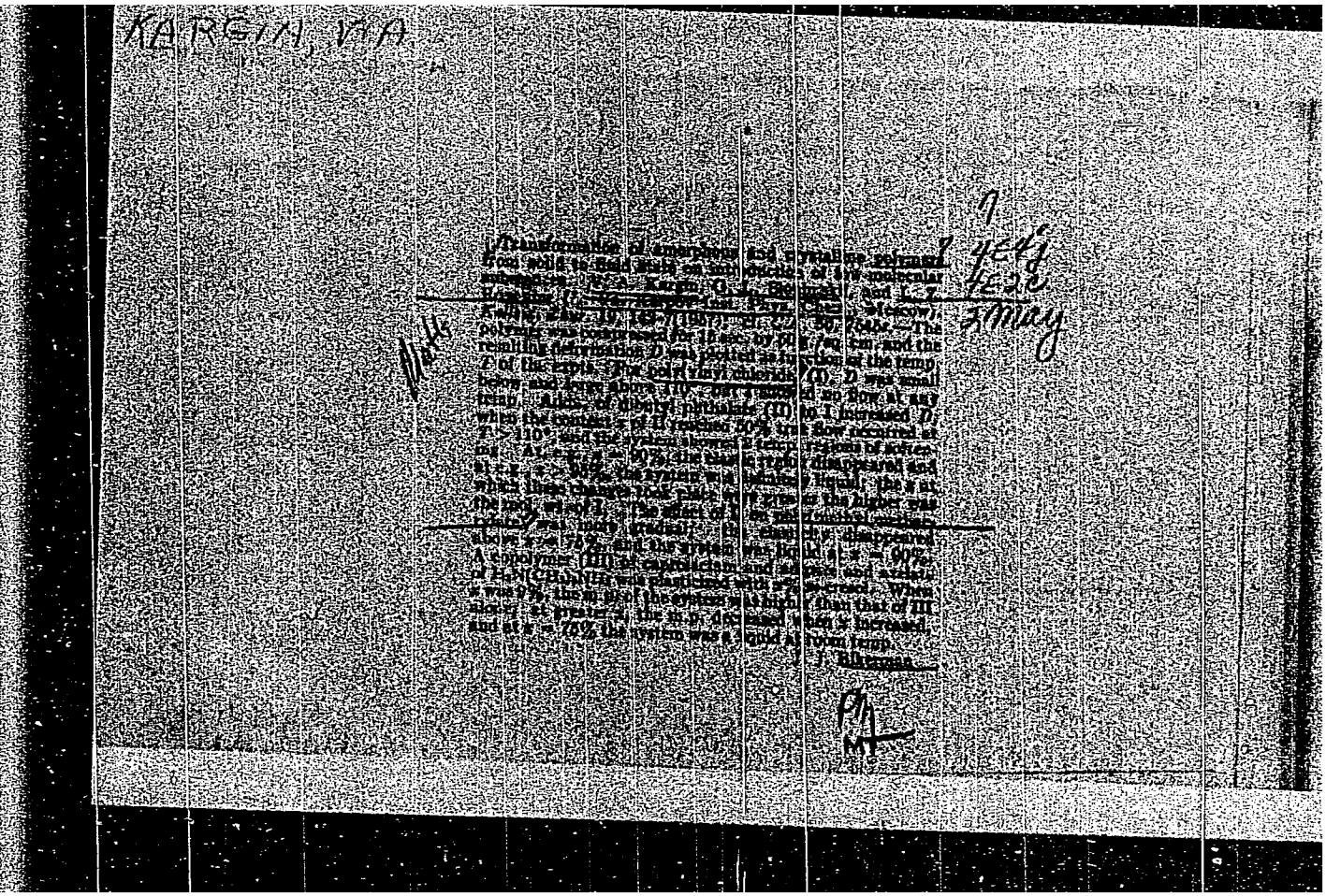
Col structure. VI. Preparation of gels and globular structures from rubbers by vulcanization of solutions. P. Zhilow, Z. N. Tarasova, and V. A. Kargin (L. Ya. Karpov Inst. Phys. Chem., Moscow). Kolloid. Zhur. 16, 345-9 (1954); cf. C.A. 48, 80i.—Gels were prepd. by mixing 3 parts S_2Cl_2 with 100 parts rubber in 476 parts toluene. For smoked sheet (I), at given stress, their deformation γ was almost independent of frequency ω of oscillations. It was small between −100° and −80°, between −40° and −30° (temp. between −10° and +80°. For butadiene rubber (II), γ depended little on ω below −100° and above +50°, but increased when ω decreased (from 1000 to 1 oscillation per min.) between these temps.; at ω = 1000, γ increased with temp. up to 80°, but γ was independent of temp. above −50° when ω was 1. This, II had many relaxation periods. Globular structures were prepd. by heating 0.16% solns. of rubber in toluene with S_2Cl_2 at 99°. The viscosity of these solns. (in toluene) increased linearly with concn. up to 1% for I and up to 0.4% for I; thus, the globules from I were more spherical than those from II. Heating the solns. of I globules at 99° for hrs. lowered γ; and the final γ was independent of the mol. wt. of I and of the concn. of S_2Cl_2. In the absence of air and S_2Cl_2, heating had a moderate effect on γ. The γ of solns. of II globules was slightly lowered by heating with S_2Cl_2 and almost unaffected by heating in air or in a vacuum, without S_2Cl_2. A *viscometer* for measurements in a vacuum is described. J. J. B.



KARGIN, V.A.

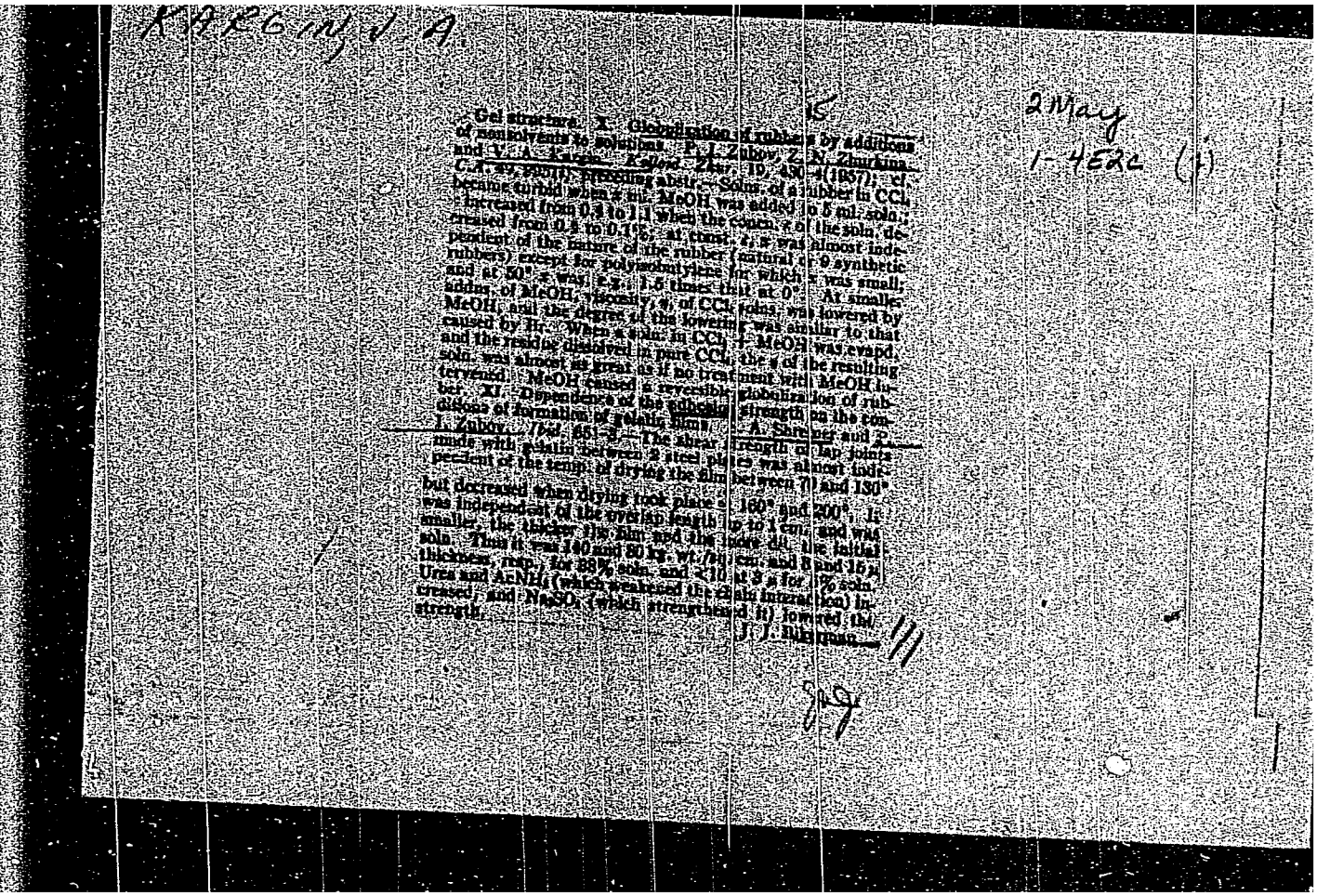
N12720*. (Russian.) On the Formation of Crystalline Alumosilicates. Ob obrazovanii kristallicheskikh alumosilikatov. Z. Ia. Urusheva, M. B. Konstantinopol'skaia, and V. A. Kargin. *Kolloidnyi Zhurnal*, v. 19, no. 2, '57, p. 138-141. 1 plate.

Crystalline alumosilicates were synthesized in a five chamber electrodialyzer and from dilute aqueous solutions of $Al(NO_3)_3$ and Na_2SiO_3 at elevated temperatures. Both types gave identical electron-microscopic picture.



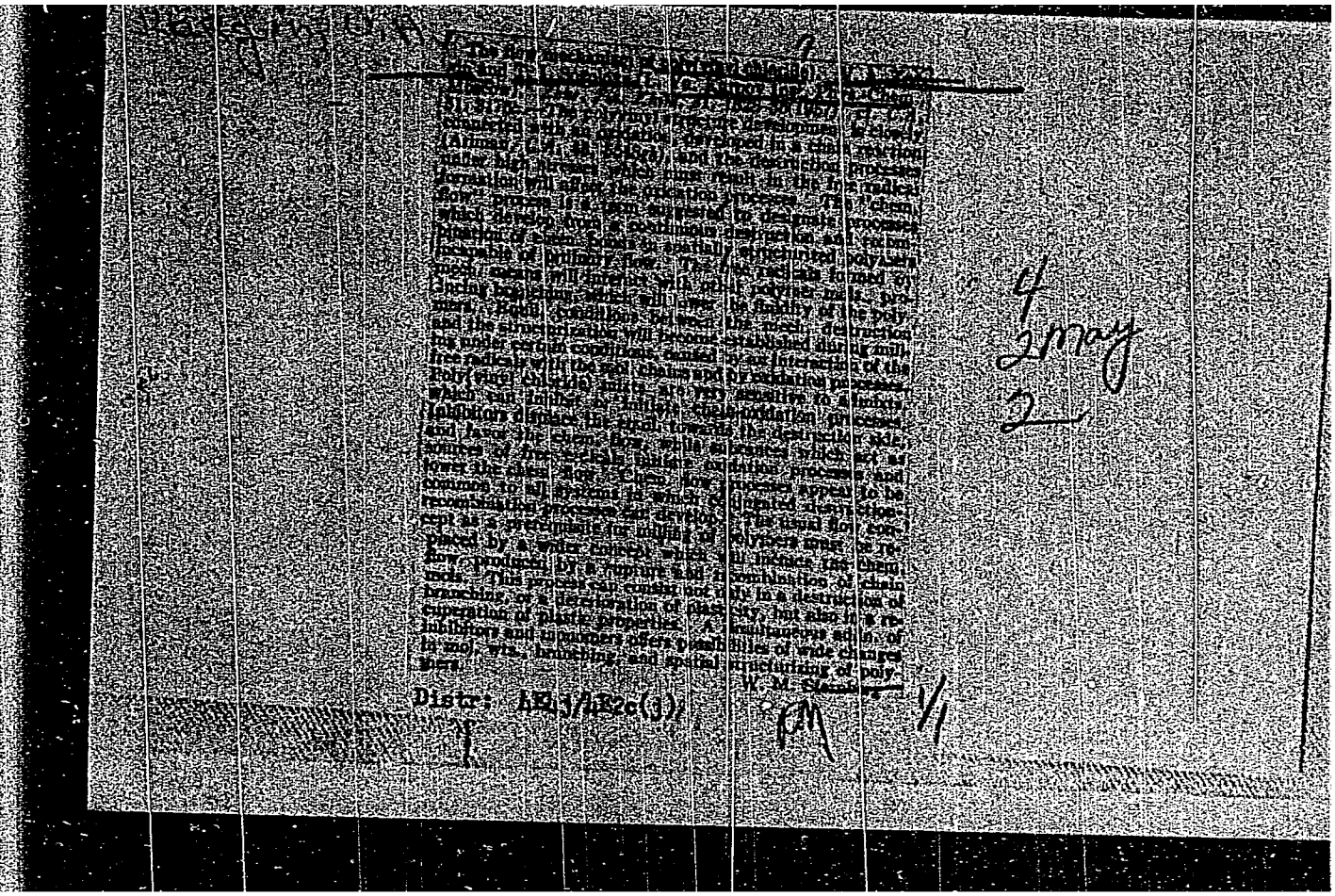
KARGIN, VA.

APPROVED FOR RELEASE: 06/13/2000 CIA-RDP86-00513R000720710017-6"



Gel structure. X. Gelatinization of rubbers by additions of nonsolvents to solutions. P. I. Zubov, Z. N. Zhurkina, and V. A. Kargin. Kolloid. Zhur. 19, 490-4(1957); cf. C.A. 49, 9001h; preceding abstr.—Solns. of a rubber in CCl4 became turbid when a nonsolvent, MeOH, was added to 5 ml. soln.; the concn. of the soln. decreased from 0.3 to 0.1% when the concn. of the soln. decreased from 0.3 to 0.1%, at const. t, π was almost independent of the nature of the rubber (natural or synthetic rubbers) except for polyisobutylene for which π was small; and at 50° π was 1.5 times that at 0°. At smaller concns. of MeOH, viscosity η, of CCl4 solns. was lowered by adding MeOH, and the degree of the lowering was similar to that caused by π. When a soln. in CCl4 + MeOH was evapd. and the residue dissolved in pure CCl4, the η of the resulting soln. was almost as great as if no treatment with MeOH intervened. MeOH caused a reversible globulization of rubber. XI. Dependence of the adhesive strength on the conditions of formation of gelatin films. A. Shreiner and P. I. Zubov. Ibid. 661-8.—The shear strength of lap joints made with gelatin between 2 steel plates was almost independent of the temp. of drying the film between 70 and 130° but decreased when drying took place at 160° and 200°. It was independent of the overlap length of 1 to 12 cm. and was smaller, the thicker the film and the more dil. the initial soln. Thus it was 140 and 80 kg. wt./sq. cm. and 8 and 15 μ thickness, resp., for 88% soln. and <10% soln. Urea and $AcNH_2$ (which weakened the gelatin interaction) increased, and Na_2SO_4 (which strengthened it) lowered the strength.

J. J. Bikerman



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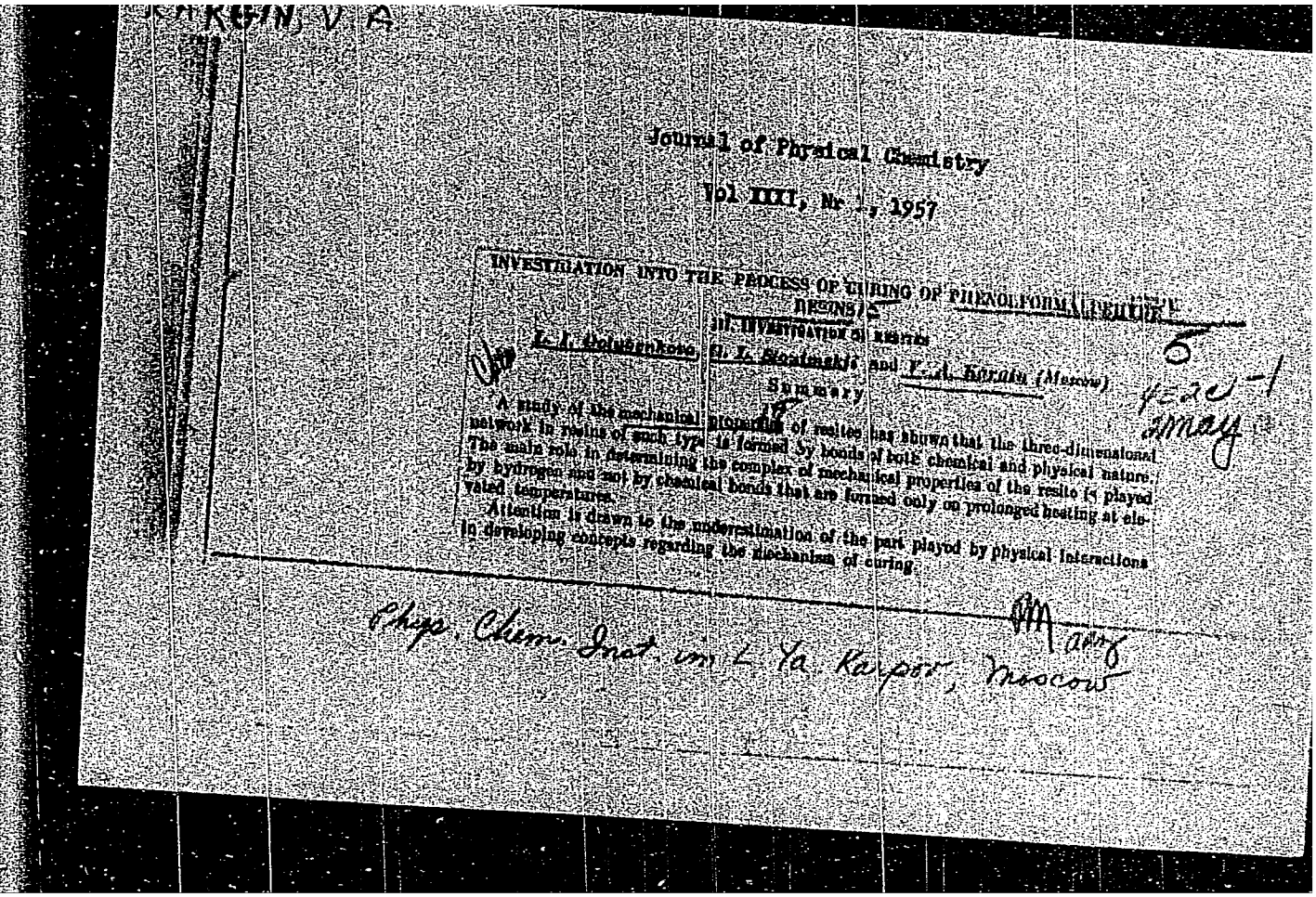


KARPIN, V. A.

Journal of Physical Chemistry

Vol XXXI, No 1, 1957

INVESTIGATION INTO THE PROCESS OF CURING OF PHENOLFORMALDEHYDE RESINS

III. Investigation of resites

L. I. Bolshakova, G. L. Slonimskii and V. A. Karpin (Moscow)

Summary

A study of the mechanical properties of resites has shown that the three-dimensional network in resins of such type is formed by bonds of both chemical and physical nature. The main role in determining the complex of mechanical properties of the resite is played by hydrogen and not by chemical bonds that are formed only on prolonged heating at elevated temperatures.

Attention is drawn to the underestimation of the part played by physical interactions in developing concepts regarding the mechanism of curing.

Phys. Chem. Inst. im L Ya Karpov, Moscow

KARGIN, V. A., TSETLIN, B. L., ZAYTSEVA, N. G., and KORBUT, V. M.

"Principles of the Disintegration of Vitreous Polymers by Radiation"

Truly Transactions of the First Conference on Radioaction Chemistry, Moscow, Izd-vo AN SSSR, 1958. 330pp.
Conference -25-30 March 1957, Moscow

Kargin, V. A.

AUTHORS: Sogolova, T.I., Aykhodzhayev, B.I., Kargin, V.A. 76-10-26/34

TITLE: The Dependence of the Mechanical Properties of Gutta Percha on the Degree of Structurization and the Temperature(Zavisimost' mekhanicheskikh svoystv guttaperchi ot stepeni strukturirovaniya i temperatury)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 10, pp. 2340-2350 (USSR)

ABSTRACT: The dependence of the complex of the mechanical gutta percha properties on the degree of structurization was investigated within a wide temperature range. It is shown that the increase of the structurization degree leads to a decrease of crystallization. There is a structurization degree where gutte percha does not crystallize and has caoutchouc-like properties. In the case of structurized gutta percha in crystalline state the strength, the elasticity modulus, and some other mechanical properties are determined by the degree of the crystallization which is a function of the structurization degree. In the case of structurized gutta percha in amorphous state (at higher structurization degrees or at temperatures above the melting tempera-

Card 1/2

The Dependence of the Mechanical Properties of Gutta Percha on the Degree of Structurization and the Temperature

ture) the mechanical properties are determined immediately by the structurization degree. Gutta percha vulcanized at 143° C in a crystalline state has at each temperature doses of combined sulphur. In these dosages the complex of mechanical properties characteristic of crystalline polymers is coupled with an increased value of the deformation inclination. There are 11 figures, 2 tables, 6 Slavic references.

ASSOCIATION: Physical Chemical Institute imeni L.Ya.Karpov (Fiziko-khimicheskiy institut imeni L.Ya. Karpova)

SUBMITTED: October 3, 1956

AVAILABLE: Library of Congress

KARGIN, V. A., MIRLINA, S.Y. and BAKEYEV, N.

"Gel formation in polyacrylate soultions," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jan-2 Feb 57, Moscow. Univeristy, Moscow.

B-3,084,395

KARGIN, V. A., and KLIMENKOV, V. S.

"Relaxation of synthetic fibers made of copolymers," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 28 Jun-2 Feb 57, Moscow, Fiber Research Inst.

B-3,084,395

KARGIN, V. A., and ROGOVINA, A. A.

"Impact strength of textile yarns," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 20 Jan-2 Feb 57, Moscow, Textile Research Inst.

B-3,084,395

KARGIN, V. A., and SOKOLOVA, T. Y.

"Flow of polyvinylchloride under high pressures," a paper presented at the 9th Congress on the Chemistry and Physics of High Polymers, 29 Jan-2 Feb 57, Moscow, KarpovInst.

B-3,084,395

KARGIN, V. A.

SLONIMSKIY, G. L., SOGOLOVA, T. I. and KARGIN, V. A.

"The Particularities of Flow in Polymers."

Title: General Meeting of the Department for Chemical Sciences of the AN USSR Held in May 30-31, and June 28,1957.

Periodical: Izvestiya AN SSSR, Otdel. Khim. Nauk, 1957, Nr 11, pp. 1416-1419 (USSR)

Kargin, V. A.

AUTHORS: Kargin, V. A., Academician, and Markova, G. S. 20-3-19/52

TITLE: Comparative Study of Order Regulations in Polymers During Their Crystallization or Orientation of Chain Molecules (Sravnitel'noye issledovaniye uporyadochennosti, voznikayushchey v polimerakh pri ikh kristallizatsii ili oriyentatsii tsepnykh molekul)

PERIODICAL: Doklady AN SSSR, 1957, Vol. 117, Nr 3, pp. 427 - 429 (USSR)

ABSTRACT: Because of the structure of polymeric chain molecules, consisting of equal, more or less regularly arranged molecular groups, the polymeric systems are considered as a special group. For the difference from the low molecular compounds, the main source of the order of which is formed by the spatial distribution of the atom groups, the high degree of ordering in polymeric systems also may be a result of the mutual position of the polymeric chain molecules. Therefore the order within polymeric substances may be obtained by the mutal orientation of the chain molecules, independent from the crystallization. In order to avoid an error often occurring, the elements of the order regulations are to be separated rigorously because of the mutual position of the chains and the order by crystallization. This can be proved on two ways: a) by the investi-

Card 1/4

KARGIN, V. A.

MIKHAYLOV, N. V., MAYBORODA, V. I., and KARGIN, V. A.

Title: "The New Production Methods for Viscous Fibers."
General Meeting of the Department for Chemical Sciences of the AN USSR Held in May 30-31, and June 28, 1957.

Periodical: Izvestiya AN SSSR, Otdel. Khim. Nauk, 1957, Nr 11, pp. 1416-1419 (USSR)

SEMENOV, N. N. and KARGIN, V. A.

Title: "The Structure and Phase-Condition of Polymers."
General Meeting of the Department of Chemical Sciences of the AN USSR Held in May 30-31, and June 28, 1957.

Periodical: Izvestiya AN SSSR, Otdel. Khim. Nauk, 1957, Nr 11, pp. 1416-1419 (USSR)

KARGIN, V. A.

KARGIN, V. A. Prof.

"Phase Transitions in Macromolecular Compounds," Section I, paper submitted at the International Symposium on Macromolecular Chemistry, Prague, 9-15 Sep 1957

C-3,800,271

KARGIN, V.A.

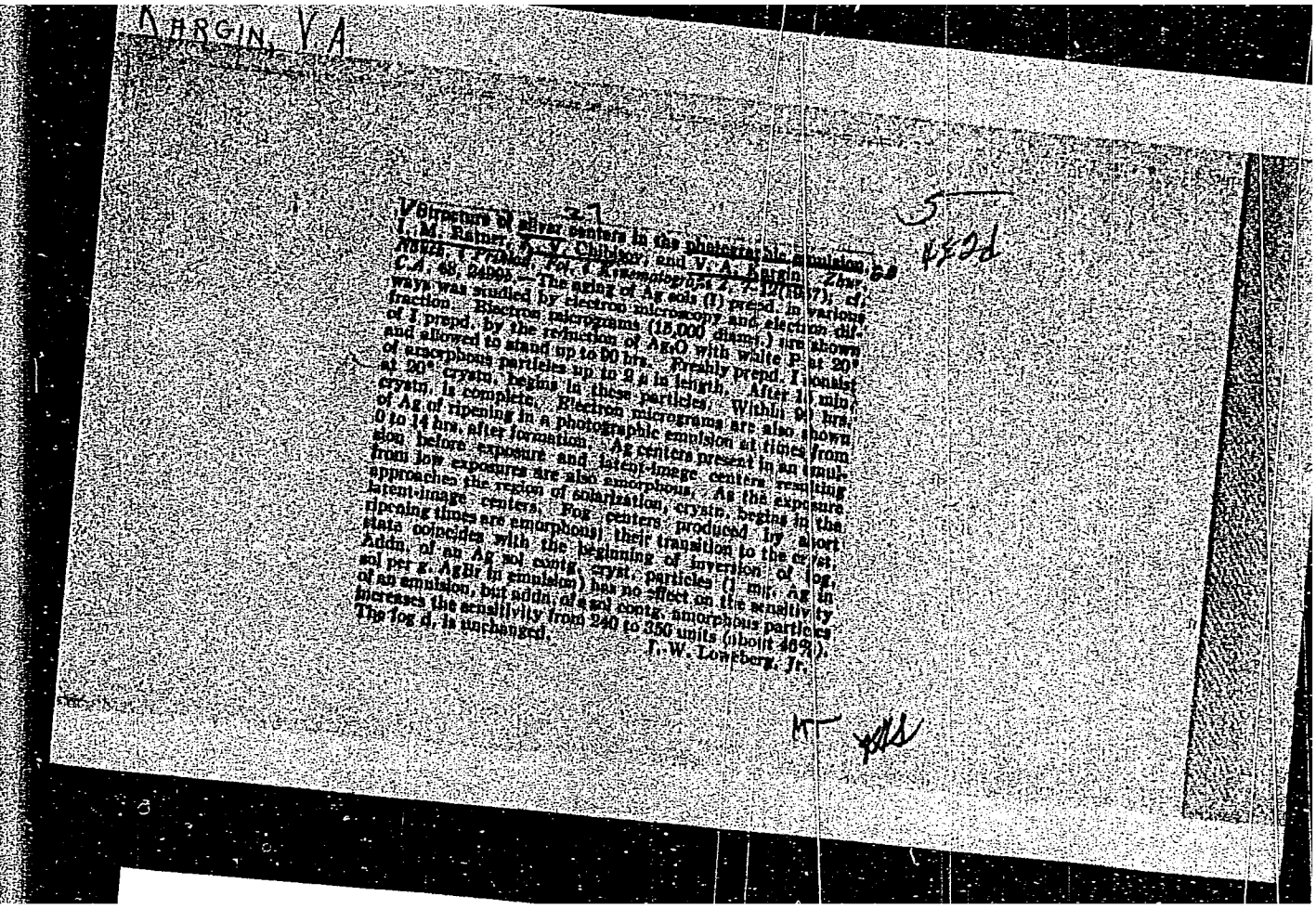
Mechanical means of production of new types of polymers. V. A. Kargin, B. M. Kovarskaya, L. I. Golubenkova, M. S. Akutin, and G. L. Slonimskii. Khim. [illegible] 1957, [illegible]-8.—Block or graft polymers can be produced by intensive mech. work. A special app. was constructed for blending brittle resins with elastomers, for blending elastomers, and for mech. production of a no. of block polymers from nitrile rubber with phenol-formaldehyde resins, epoxy resins, and bituminous-coal pitches. The strength and elasticity of the block polymers with a high proportion of low-mol. resins and low rubber content greatly exceeded those of the orig. resins. W. M. Sternberg

8

4E2c(j)

2MAY

JJ



ARGIN, V.A.

Structure of silver centers in the photographic emulsion. I. M. Rainer, [illegible] Chibisov, and V. A. Argin. Zhur. Nauch. i Prikhod. Fot. i Kinematografii, 5, 1-12(1960); cf. C.A. 49, 9489e. — The aging of Ag sols (I) prepd. in various ways was studied by electron microscopy and electron diffraction. Electron micrograms (15,000 diams.) are shown of I prepd. by the reduction of Ag_2O with white P at 20° and allowed to stand up to 90 hrs. Freshly prepd. I consist of amorphous particles up to 2 μ in length. After 1 min. at 20° cryst. begins in these particles. Within 90 hrs. cryst. is complete. Electron micrograms are also shown of Ag of ripening in a photographic emulsion at times from 0 to 14 hrs. after formation. Ag centers present in an emulsion before exposure and latent-image centers resulting from low exposures are also amorphous. As the exposure approaches the region of solarization, cryst. begins in the latent-image centers. Fog centers, produced by a short ripening times are amorphous; their transition to the cryst. state coincides with the beginning of inversion of log. Addn. of an Ag sol contg. cryst. particles (1 mμ. Ag in sol per g. AgBr in emulsion) has no effect on the sensitivity of an emulsion, but addn. of a sol contg. amorphous particles increases the sensitivity from 240 to 350 units (about 46%). The fog d. is unchanged.

T. W. Lontberg, Jr.

AYKHODZHAYEV, B.I.; SOGOLOVA, T.I.; KARGIN, V.A., akademik

Influence of the conditions of structure formation on the mechanical properties of gutta-percha. Izv. AN Uz. SSR Ser. khim. nauk no.1:49-54 '57. (MIRA 13:10)

(Gutta-Percha)

KARGIN, V.A.; KOVARSKAYA, B.M.; GOLUBENKOVA, L.I.; AKUTIN, M.S.; SLONIMSKIY, G.L.

Mechanical method for obtaining polymers of a new type. Khim. prom. no.2:77-79 Mr '57. (MLRA 10:6)

(Polymers)

KARGIN, V.A.

KARGIN, V.A.

AUTHORS: Yermolina, A.V., Markova, G.S. and Kargin, V.A. 70-5-9/31

TITLE: Electronographic Investigations of Polymers. (Elektronograficheskoye issledovaniye polimerov. IV. Study of Changes in the Structure of Polytrifluorchlorethylene over the Melting Range of the Crystals (IV. Izucheniye izmeneniy v strukture politriftorkhloretilena v intervale temperatur plavleniya kristallov)

PERIODICAL: Kristallografiya, 1957, Vol.2, No.5, pp. 623-627 (USSR)

ABSTRACT: Thin films (0.02-0.03 μ thick) of polytrifluorchlorethylene were prepared by evaporating a solution of the polymer in mesitylene on the surface of glycerin heated to 160 °C. An ЭМ-4 electronograph was used and the calibration was made using NaCl evaporated onto colloxylene film. All such polymer films were crystalline. Amorphous films (of the molten polymer) were obtained by heating the specimen inside the camera with an electric heater. A ВУП-2 (vakuumnaya napylitel'naya ustanovka) evaporating unit was used for covering the salt or polymer films with a thin layer of quartz to prevent their destruction on heating. The crystalline polymer gave electronograms with 20 lines which could be indexed on a hexagonal cell with $a = 6.34$ and $c = 35$ A. Their intensities were estimated visually with a standard scale. Electronograms from

Card1/3

Electronographic Investigations of Polymers. IV. Study of Changes in the Structure of Polytrifluorchlorethylene over the Melting Range of the Crystals. 70-5-9/31

the amorphous material were photometered (МФ-4 microphotometer) and transformed by Vaynshteyn's methods to give a radial distribution curve from the formula:

$$4\pi r^2 \rho(r) = 4\pi r^2 \rho_o \sum_n K_n^2 + 2r/\pi \int si_{(s)} \sin sr \, ds .$$

Here, $\sum_n K_n^2$ is the sum of the squares of the relative scattering powers of the atoms in the molecule.

$$i_s = (I_s - \Sigma f_n^2)/\Sigma f_e^2$$

where I_s are the observed intensities at $s = \sin\theta/\lambda$, f_n are the atomic scattering factors with corrections for incoherent scattering and f_e the atomic scattering factors in electron units. Peaks in the radial distribution curve were found at $r = 1.40$, 1.57, 1.75, 2.25, 2.8 and 5.2 A. These

Card2/3

KARYAKINA, M.I.; KARGIN, V.A.; SOGOLOVA, T.I.

Effect of the molecular weight of film-forming substances, solvents and plasticizers on stresses in lacquer films. Khim. prom. no.5:265-268 Jl-Ag '57. (MIRA 10:12)
(Molecular weights)
(Strains and stresses)
(Lacquer and lacquering)

KARGIN, V. A.

AUTHORS: Gorina, A. A., Kargin, V. A., Kozlov, P. M., 54-8-2/19
Kotrelev, V. N.

TITLE: Production of Goods From Fluoroplast-4 (Pererabotka ftoroplasta-4 v izdeliya).
Investigation of the Preforming Process (Issledovaniye protsessa tabletirovaniya).

PERIODICAL: Khimicheskaya Promyshlennost', 1957, Nr 8, pp. 5-9 (USSR)

ABSTRACT: The investigations concerning the detection of processes for the production of goods from fluoroplast-4 were started in 1949. Foreign references (references 3-6) and the original variants of the laboratories of L. V. Chereshkevich (NIIPP) and of L. F. Vereshchagin (IOKh AN) were at the disposal of the NIIPM where they were produced. The production method was divided into the following 4 stages:

1) preparation of the pulverulent fluoroplast-4 for preforming: a) thermal treatment of the powder, b) aeration of the powder.
2) Preforming
3) Caking together
4) Cooling of the finished product. In the investigation of the production method the papers of P. P. Balandin

Card 1/3

(reference 9) about the computation of the press process of dry refractory materials as well as the papers about the preforming process in press powders were taken into consideration (reference 10). The purpose of present paper was the detection of the optimum specific pressure in the preforming from the pulverulent fluoroplast-4, as well as the detection of the optimum thermal retardation of the tablets at this pressure. As criteria for the optimum pressures and preforming times the variations of the linear dimensions and of the specific weight of the pressed samples were chosen. It is shown that the preforming from the pulverulent fluoroplast-4 at specific pressures of not below 300 kg/cm^2 and not above 750 kg/cm^2 is to be carried out. It is shown that a thermal retardation under pressure is necessary in the preforming. For the investigated dimensions of the unworked pieces a formula

$$T = A \frac{H}{D}$$

 was found. This determined the dependence of the amount

of the thermal retardation of the height and diameter of the unworked pieces. T - optimum thermal retardation of the unworked pieces of fluoroplast-4 under the preforming pressure, in minutes. A - constant (in the polymers investigated here it amounted to 7,7 - 9,1) H- the height of the unworked piece. D - diameter of the unworked piece.
There are 4 figures, 2 tables, and 11 references, 2 of which are Slavic.

AVAILABLE: Library of Congress

KARGIN, V.A., akademik; BERESTNEVA, Z.Ya.; ARIPOV, E.A.

Effect of water on the formation and decomposition of clay mineral aggregates. Dokl. AN Uz. SSR no.8:21-25 '57. (MIRA 11:5)

1.Nauchno-issledovatel'skiy fuzuko-khimicheskiy institut im. L.Ya. Karpova g. Moskva.

(Clay)

GORINA, A.A.; KARGIN, V.A.; KOZLOV, P.M.; KOTRELEV, V.N.

Processing polytetrafluoroethylene into industrial articles. Khim. prom. no.8:453-457 D '57. (MIRA 11:2)
(Ethylene) (Plastics--Molding)

KARGIN V. A.

AUTHOR: None Given (Card 2 of 3)

3-9-19/31

TITLE: Inter-vuz Scientific Conferences (Mezhvuzovskiye nauchnyye konferentsii)

PERIODICAL: Vestnik Vysshey Shkoly, 1957, # 9, pp 73 - 76 (USSR)

ABSTRACT:

In January 1957, the Second All-Union Conference on Photosynthesis took place, organized by the Institute of Plant Physiology of the Academy of Sciences, USSR, and by the Faculty of Soil-Biology of the Moskva University. About 700 representatives of 130 scientific-research institutes, vuzes and ministries were present. The introductory report was made by Academician A.L. Kursanov who described the development of photosynthesis during the last ten years and invited the scientists to concentrate their work on the application of radioactive and stable isotopes. Nearly 100 reports were read: 13 on photochemistry, 9 on the investigation of chloroplast structure, 19 on the investigation of pigments, 9 on the photosynthesis of water plants, bacteria, etc.

Reports on the results reached in the field of photosynthesis were made by: Doctor G. Polster from the German Democratic Republic, Professor N. Seledzhanu from the Rumanian People's Republic, Professor K. Popov from the Bulgarian People's Republic. Finally the Conference stated the great role of Soviet scientists in the development of photosynthesis and gave some defi-

Card 1/7

ciencies in the research organization, in particular, the insufficient participation of biologists in the solution of the problem in question.

The Ninth Conference on High-molecular Combinations took place from 28 January to 1 February. It was organized by the USSR Academy of Sciences and the MGU and concentrated on general matters of polymeric chemistry and physics. About 1500 scientists were present from 172 organizations and 37 towns of the Soviet Union, the representatives of 42 vuzes and 17 foreign scientists from China, East Germany, Poland, Rumania, Czechoslovakia, Yugoslavia, the German Federal Republic and Israel.

The introductory speech was made by Academician V.A. Kargin, who described the present state of science relating to polymers, and invited the scientists to concentrate their work on new methods of obtaining polymers, and new classes of high-molecular substances. In the section of polymeric synthesis 43 papers were read. The author enumerates the following reports:
Academician A.N. Nesmeyanov on the reaction of ethylene polymerization and carbon tetrachloride.

S.S. Medvedev, Member-Correspondent of the USSR Academy of Sciences, on the kinetics of various types of polymerization.

Card 2/ 7 Professor **B. A. Dolgoploska** (Leningrad) on the initiation of radical polymerization.

A.A. Korotkov (Leningrad) on catalytic polymerization.

V.V. Korshak, Member-Correspondent of the USSR Academy of Sciences (Moscow) on syntheses of phosphor containing polymers.

Professor G.Kh. Kamay (Kazan') on syntheses of certain unsaturated ethers of phosphinous acids.

Academician O. Vikhterle and Professor Vesely (Czechoslovakia) on cation polymerization of olefines.

K.A. Andriyanov, Member-Correspondent of the USSR Academy of Sciences (Moscow) on the elaboration of a new class of thermostable polymers.

Professor Z.A. Rogovin on the qualities of methyl carbonic ether of celluloses.

Professor V.I. Ivanov on cellulose qualities and their application in chromatography.

Professor Van-Yu- Khay (China) on the titration of terminal groups of polycaprolactams.

Academician V.A. Kargin (Moscow) and G.S. Markova on the orientation and crystallization of polymeric chains and their disposition.

Card 3/7 Academician P.A. Rebinder (Moscow) and Professor G.V. Vinogradov on methods characterizing the viscous elastic qualities

KARGIN, V. A.

General Meeting of the Department for Chemical Sciences of the AN USSR Held in May 30-31 and June, 28, 1957 62-11-29/29

Izv. AN SSSR, Otdel. Khim Nauk SSSR, 1957, No. 11, pp. 1416-1419.

June 28, 1957: Chairman: N. N. Semenov, Member of the Academy, Kargin, Valentin Alekseyevich, Member of the Academy spoke on "The Structure and Phase-Condition of Polymers."

G. L. Slonimskiy (partaking authors T. I. Sogolova and V. A. Kargin) spoke on "The Particularities of Flow in Polymers."

N. V. Mikhaylov, Doctor of chemical sciences (partaking authors V. I. Mayboroda and V. A. Kargin) spoke on "The New Production Methods for Viscous Tibers". V. I. Sharkov, Professor, S. Z. Roginsky, corresponding Member of the Academy, V. I. Ivanov, Doctor of chemical sciences took part in the discussion. Welcome speeches were held by N. N. Semenov, Member of the Academy, D. P. Novikov, Minister-Representative for chemical industry, V. I. Veselovskiy, Professor, Ya. I. Gerasimov, corresponding Member of the Academy, P. A. Rebinder, Member of the Academy and Ye. O. Kuvshinskiy, Professor.

AVAILABLE: Library of Congress

Card 3/3

YAMINSKAYA, Ye.Ya.; TROSHKINA, Ye.V.; KARGIN, V.A.

Importance of friction force in fatigue strength of cotton cord. Kauch.i rez. 16 no.5:25-27 My '57. (MLRA 10:7)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti.
(Friction) (Cordage--Testing)

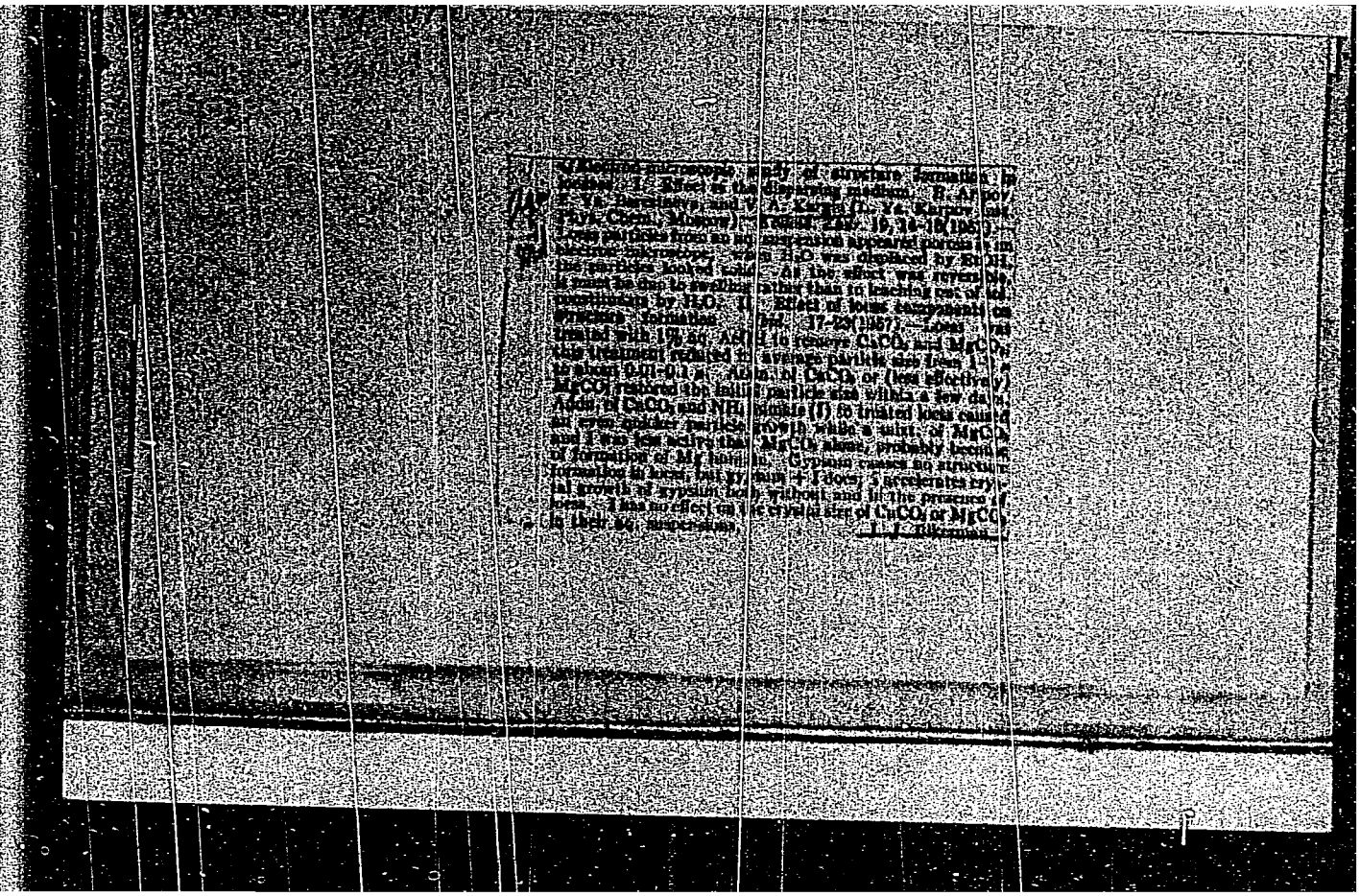
KARGIN, V.A.

SULEYMANOVA, Z.I.; KARGIN, V.A.

Investigating the mechanical properties of cellulose fibers with low moisture content. Kauch. i rez. 16 no.12:18-22 D '57. (MIRA 11:3)

1. Nauchno-issledovatel'skiy institut shinnoy promyshlennosti i fiziko-khimicheskiy institut im. L.Ya. Karpova.
(Cellulose) (Fibers--Testing)

KARGIN, V.A.

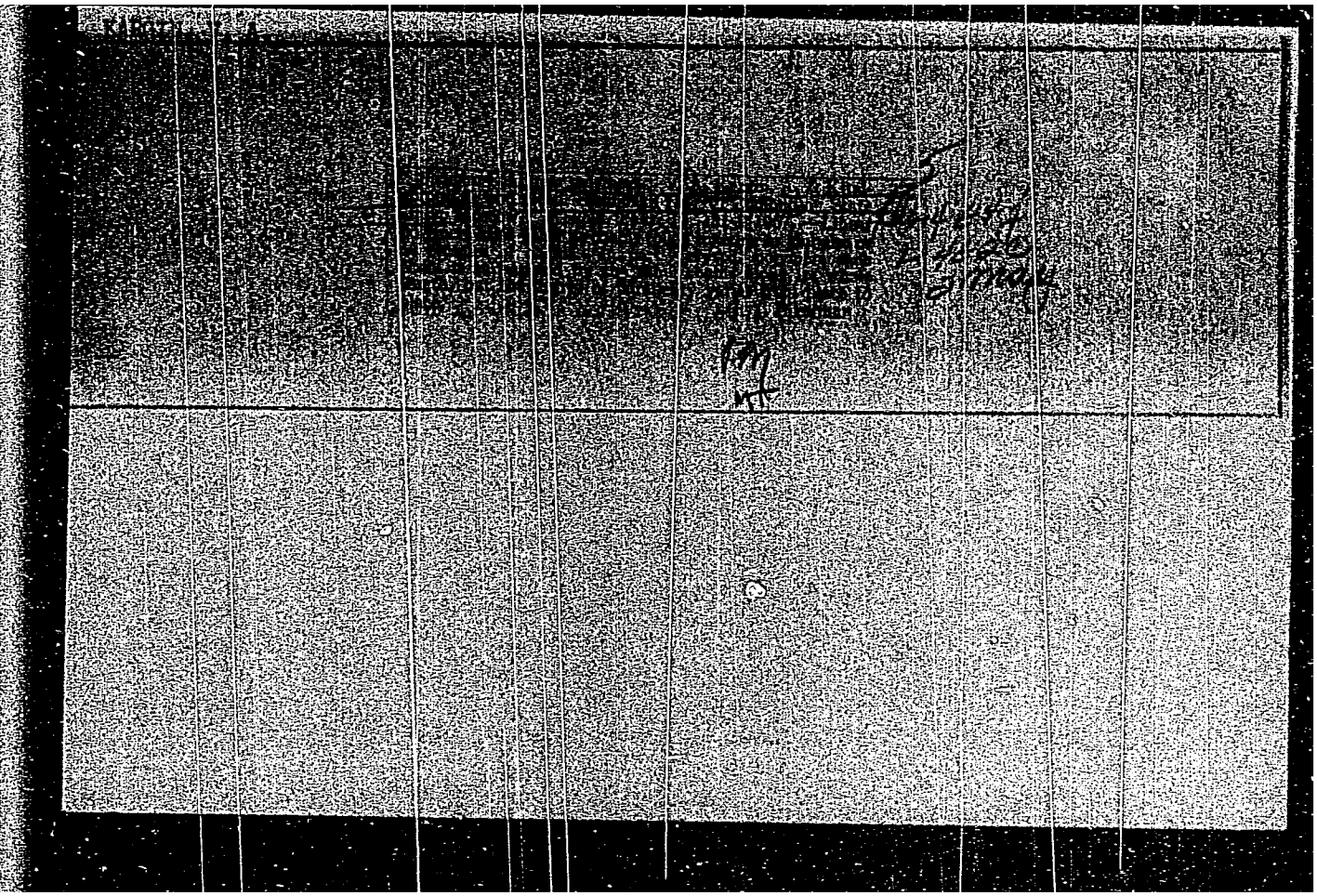


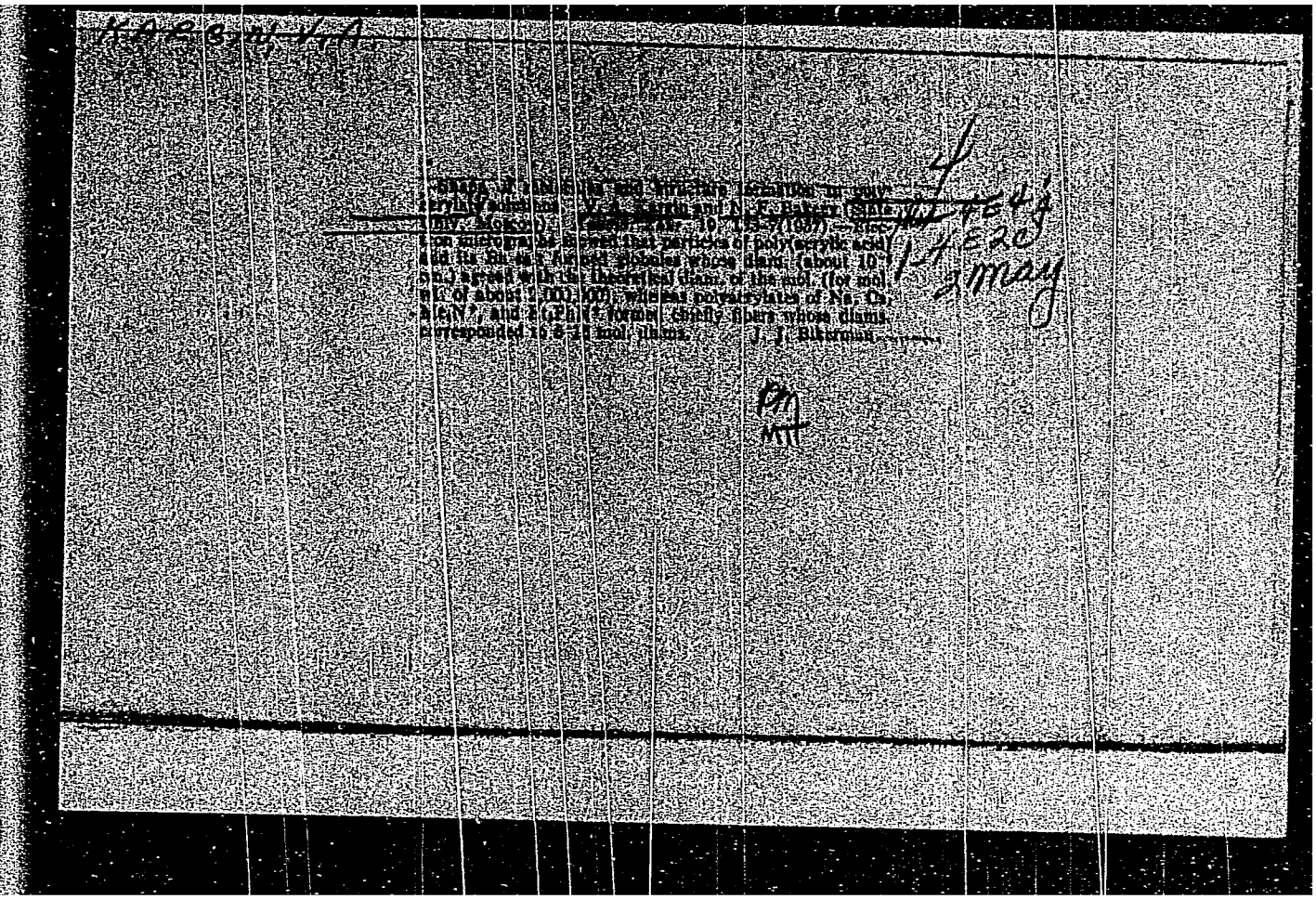
KARGIN, V A

ARIPOV, E.; BEREZTNEVA, Z.Ya.; KARGIN, V.A.

Electron microscopic study of structure formation in loess. Part 2. Effect of loess components on structure formation. Koll. zhur. 19 no.1:17-23 Ja-F '57. (MLRA 10:4)

1. Fiziko-khimicheskiy institut im. L.Ya. Karpova, Moskva.
(Loess) (Electron microscopy)





Kargin, V.A.

AUTHORS: Aykhodzhayev, B.I., Sogolova, T.I., Kargin, V.A. 76-11-26/35

TITLE: The Dependence of the Mechanical Properties of Structured Gutta-Percha on the Conditions for the Forming of Cross Linkages (Zavisimost' mekhanicheskikh svoystv strukturirovannoy guttaperchi ot usloviy obrazovaniya poperechnykh svyazey)

PERIODICAL: Zhurnal Fizicheskoy Khimii, 1957, Vol. 31, Nr 11, pp. 2551-2561 (USSR)

ABSTRACT: The influence exercised by the conditions for the forming of cross linkages on the mechanical properties is investigated. It is shown that the properties of structured gutta-percha depend to an essential extent on the phase state existing during the spatial-structural formation. It is shown that vulcanization of gutta percha in the amorphous state (independent of the type of vulcanization) leads to a decrease of the degree of crystallization. With a content of ~4.0% of bound sulphur gutta percha becomes amorphous. It is further shown that for a realization of the amorphization process of crystalline polymers not only the number of cross linkages but also the degree of disordering of the chain molecules in the process of spatial-structural formation is of essential importance. On the basis of the example of gutta percha it is shown that, according to the degree

Card 1/2

of classification the polymers which were made amorphous have various different properties. It is shown that the vulcanization of gutta-percha in the crystalline state causes no noticeable reduction of the degree of crystallization. Even with a content of 5.6% of bound sulphur gutta-percha retains its crystalline structure. It is shown that gutta-percha which was vulcanized in the crystalline state, becomes noticeably amorphous after additional heating beyond melting point followed by cooling down. The data obtained here distinctly show the dependence of the properties of gutta-percha on the depth of crystallization as well as on the degree of structural formation, and thus the peculiarities of structural formation in the crystal polymer are made plausible. There are 8 figures, 3 tables, and 10 references, 8 of which are Slavic.

ASSOCIATION: Moscow Physical-Chemical Institute imeni L.Ya.Karpov (Fiziko-khimicheskiy institut im. L.Ya.Karpova, Moskva)

SUBMITTED: October 3, 1956

AVAILABLE: Library of Congress

Card 2/2

KARGIN, V.A., akademik; KOVARSKAYA, B.M.; GOLUBENKOVA, L.I.; AKUTIN, M.S.; SLONIMSKIY, G.L.

Block-copolymer from phenol-formaldehyde resins and nitrile rubber. Dokl. AN SSSR 112 no.3:485-486 Ja '57. (MLRA 10:4)

1. Gosudarstvennyy nauchno-issledovatel'skiy i proyektnyy institut plasticheskikh mass.
(Nitrile rubbers) (Phenol condensation products)

KARGIN, V.A.

AUTHOR TSETLIN, B.L., ZAYTSEVA, N.G., KARGIN, V.A., Member of the Academy. 20-2-39/67

TITLE On Arboriform Cracks in plexiglass, Developed under the action of Electronic Radiation.
(O drevovidnikh treshchinakh, razvivayushikhaya v pleksiglase pod deystviyem elektronnogo izlucheniya - Russian)

PERIODICAL Doklady Akademii Nauk SSSR, 1957, Vol 113, Nr 2, pp 380-382, (U.S.S.R.)

Received 6/1957 Reviewed 7/1957

ABSTRACT Such cracks were investigated by the authors in the polymethyl acrylate (or plexiglass on this base respectively), where they develop under the action of an intense radiation energy. As this influence can be important for the adaptability of plexiglass in the domain of radioactive radiation, it attracted their attention. These cracks are a new phenomenon, dissimilar to any other crack-formation in synthetic materials. The arboriform crack originate and grow only from an existing or a caused injury. Its velocity of growth is propotional to the magnitude of the radiation dose. From the original spot they grow and gradually and steadily include the entire surface irradiated. Its branches do not intersect and grow through each other. The different "trees" are clearly marked off from each other. Only fast electrons effect this kind of cracks, X-ray irradiation does not produce this effect. They develop in plates of a suffient thickness, which must be larger than the one

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for a final conclusion, therefore it is only provisionally concluded: Obviously these cracks are caused in consequence of developing interior tensions which cause the decomposition of the sample at the weakest points. These are the apertures of the micro-cracks in the spot of the mechanical injury. Their arboriform appearance develops vertically to the irradiated surface.

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On Arboriform Cracks in plexiglass, Developed under the Action of Electronic Radiation. 20-2-39/67

bundle. The development of cracks probably proceeds in consequence of mechanical stresses. The latter can probably be traced back to 2 causes: 1) To the shrinking of plexiglass by its radiation-chemical decomposition, on which occasion a large quantity of gases develops. 2) To the accumulation of an electric surpluscharge. Here the low-molecular decomposition products of the polymer are very important which supersaturated solutions in the entire interior of the sample develop. These products can be absorbed in the apertures of the micro-cracks. Their molecules absorbed near the boundary of the material layer disrupted by fast electrons can have homonymous surplus-charges. The electrostatic interaction of these charges presumably causes the further growth of the cracks by which again new adsorption points develop.
(2 illustrations, among them 1 plate with 5 microphotographs, 2 citations from publications)

ASSOCIATION Institute for Physical Chemistry of the Academy of Science of the U.S.S.R.

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SUBMITTED 16.11.1956
AVAILABLE Library of Congress

Card 3/3

Comparative Study of Order Regulations in Polymers During Their Crystallization or Orientation of Chain Molecules

gation of the polymeres being in crystallization by means of direct structure methods at temperatures above and below the melting point, b) by the regarding of the structure of highly-orientated samples, not varying the orientation of the investigated polymere during its melting and crystallization. The electronographic investigation according to a) was carried out at terylene and poly-trifluor-chlorine-ethylene. Thereby it was shown that the interference-figures of their crystals above and below the melting point have many things in common. It may be assumed that the polymeres form ordered systems also in an amorphous state. At the construction of the radial-distribution-curves ("krivyye radial'nogo raspredeleniya") it really was shown that the first maxima of the curves correspond to the distances between the atoms in the polymeric molecules, and that they are the result of the regular structure of the chain molecules. The last maxima in both investigated polymeres correspond to the mutual order of the polymeric molecules (figure 1, 2) So, it was shown that the order regulations of the polymeres in the amorphous state is approximated to that one in the crystalline state. In this latter case it only differs by additional elements of order. Apparently, the order in the mutual chain arrangement

Comparative Study of Order Regulations in Polymers During Their Crystallization or Orientation of Chain Molecules

already occurs in the amorphous state. In the course of the crystallization additional bindings arise, without varying the consisting order. It was much more difficult to carry out the experiment according to b). Hereto polyethylene-(100 - 150 μ) and gutta percha-(0,02 - 0,05 μ thick) films were used. Expanded strips of polyethylene were irradiated by fast electrons, whereas gutta percha was vulcanized. Figure 3 shows electronograms of polyethylene. Therefrom the similarity of the interference-figures of a number of reflexes at crystallized and amorphous polyethylene have been stated. Consequently, the separation of the reflexes of the interference-figure was rendered possible, arising according to the orientation of the polymeric chains. Furthermore, it was cleared which share in this figure is conditioned by the homogeneous, monoaxial orientation of the chain molecules of the polymere and which one by the arising of a more rigorous order according to the polymerization. Figure 4 shows electronograms of the gutta percha films at 20 and 70°. From the obtained experimental results is to be seen that the mutual ordering of the polymeric molecules already may arise in the amorphous state. The ordered state, apparently.

Comparative Study of Order Regulations in Polymers During Their Crystallization or Orientation of Chain Molecules

is a necessary, however, not sufficient condition of the following crystallization. There are 4 figures.

ASSOCIATION: Physical-Chemical Institute imeni L. Ya. Karpov (Fiziko-khimicheskiy institut im. L. Ya. Karpova)

SUBMITTED: July 15, 1957

AVAILABLE: Library of Congress

KARGIN V. A.

AUTHOR: Malyusov, V. A. 64-1-18/19

TITLE: Scientific Conference at the Institute for Physical Chemistry Imeni L. Ya. Karpov
(Nauchnaya konferentsiya v Fiziko-khimicheskom institute imeni L. Ya. Karpova)

PERIODICAL: Khimicheskaya Promyshlennost', 1958, Nr 1, pp. 56-56 (USSR).

ABSTRACT: At the end of November, 1957, a meeting of the scientific session of the scientific council took place in the above mentioned institute in honour of the 40th anniversary of the great socialist October Revolution. 19 contributions of the most interesting works carried out of lately in this institute were delivered. The corresponding member of the AN USSR, professor S. S. Medvedev, gave a report on the investigation of the general rules governing the emulsion polymerization. The active member of the AN USSR, professor V. A. Kargin reported on new observations in structural polymers. The corresponding member of the AN USSR, professor K. A. Kocheshkova reported on investigations in the field of organic lithium compounds. The corresponding member of the AN USSR, N. A. Kazarnovskiy,

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reported on peroxide compounds of the alkaline metals, professor A. I. Shatenshteyn on the isotopic reactions with deuterium in anhydrous solutions, professor P. P. Shorygin on the interaction of the substituents in molecules of organic compounds, D. N. Shirogin on the nature and effect of the hydrogen- and metal element binding, professor B. F. Ormont on the importance of the solid phases, professor G. S. Zhdanov reported on the work of the electronic computing machine "Kristall" and demonstrated it. V. L. Karpov reported on the investigations of the radiation stability of high polymers, professor V. I, Veselovskiy on the mechanism of the radiation-electrochemical processes, professor M. A. Proskurnin on the sensitization of radiation-chemical reactions, professor S. Ya. Pshezhetskiy on the oxidation of nitrogen under ionizing radiations, professor M. N. Tunitskiy on the molecule- and ionic dissociation in the mass spectrometer, A. Kh. Breger on sources of nuclear radiations, professor Ya. M. Kolotyrkin on electrochemical investigations of metals, the corresponding member of the AN USSR professor N. M. Zhavoronkov reported on the process of steady and unsteady mass transport in the absorption and rectification, professor

KARGIN, V.A.

S/020/62/143/006/015/024
B106/B138

AUTHORS: Bort, D. P., Kronman, A. G., Minaker, K. S., Shtarkman, B. P., and Kargin, V. A., Academician

TITLE: Electron microscopic study of crystalline polyvinyl chloride

PERIODICAL: Akademiya nauk SSSR. Doklady, v. 143, no. 6, 1962, 1345-1347

TEXT: Electron microscopic investigations of highly crystalline polyvinyl chloride were carried out for the first time. To prepare the specimens, one drop of a solution of the polymer in cyclohexanone was put on the surface of distilled water saturated with cyclohexanone. The resulting film was applied to a collodion base. Such specimens were crystallized by heating to 80, 100, and 120°C for different periods and were compared against amorphous specimens obtained by drying the film at room temperature. In the electron microscope specimens heated to 100°C for 30 min showed, compact formations consisting of parallel bands, the number and dimensions of which increased with heating time. In shape, they were either reminiscent of extended concertinas, crabs, claws, or macromolecules in bundles. These bundles were sometimes bent, the bands re-

Card 1/3

Electron microscopic study...

maining parallel and the density in the bands being lower owing to the more defective crystal structure. The specimens heated to 120°C showed basically the same structures. Specimens crystallized at 80°C (near the brittle temperature of the polymer) showed triangles and rhombs as morphological formations. Strangely bent stripes and disks always formed the background of the preparations. When the surface of the crystalline foils was etched in dichlorethane, the bands showed a transversely folded structure (thickness of the folds 300 Å, length 800 Å). The position of the folds in the bands fitted very well into the formation mechanism for bands proposed by V. A. Kargin and G. L. Slonimskiy (Vvedeniye v fiziko-khimiyu polimerov (Introduction to the physical chemistry of polymers), M., 1960, p. 118). After etching, the background surface also changed a fibrous structure. It is probable that these fibrous structures cannot produce more perfect shapes (bands) due to the prevailing kinetic conditions. The stability of the crystalline structures was studied by intense electron irradiation of the film base in the electron microscope. The crystallites showed high strength in all cases. In crystalline forms obtained from a solution of polyvinyl chloride in dichlorethane, no new forms were observed other than the morphological ones described. There are 3 figures. The English-language reference reads as follows: P. H. Till, ...

Card 2/3

Electron microscopic study...

S/020/62/143/006/015/024
B106/B138

J. Polym. Sci., 24, 301 (1957).

SUBMITTED: January 19, 1962

Card 3/3

KARGIN, V.A.

5(3) P4 PHASE I BOOK EXPLOITATION SOV/1589

Akademiya nauk SSSR.

Khimiya bol'shikh molekul; sbornik statey (Chemistry of Large Molecules; Collection of Articles) Moscow, Izd-vo AN SSSR, 1958. 299 p. (Series: Akademiya nauk SSSR. Nauchno-populyarnaya seriya) 30,000 copies printed.

Compiler: G.V. Sklovskiy; Resp. Ed.: A.V. Topchiyev, Academician; Ed. of Publishing House: V.A. Boyarskiy; Tech. Ed.: I.N. Guseva.

PURPOSE: This book is intended for a wide circle of readers including those who have had no training in chemistry. It can also serve as a manual for propagandists, teachers, and journalists.

Card 1/8

Chemistry of Large Molecules (Cont.) SOV/1589

COVERAGE: This collection of articles reflects the trend for the future development of the Soviet chemical industry as indicated by the May plenary session of the Central Committee of the Communist Party within the framework of the new Seven Year Plan. These articles were published in newspapers and journals. The authors, scientists and industry workers, developed the theme of accelerated development of the chemical industries, and sciences, with stress on the manufacture of synthetic fibers, plastics, and other materials. Some of the articles were abridged, revised, or enlarged. The articles were selected so as to give an adequate survey of the chemistry and technology of high-molecular-weight compounds and their use in industry, agriculture, and in the manufacture of consumers' goods. Mentioned are raw materials for the production of polymers. This book belongs to the popular-science series of the Academy of Sciences. Similar volumes are intended for future publication. No references are given.

TABLE OF CONTENTS:

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PART I

CHEMISTRY AND THE PROGRESS OF SOCIALIST SCIENCES AND TECHNOLOGY

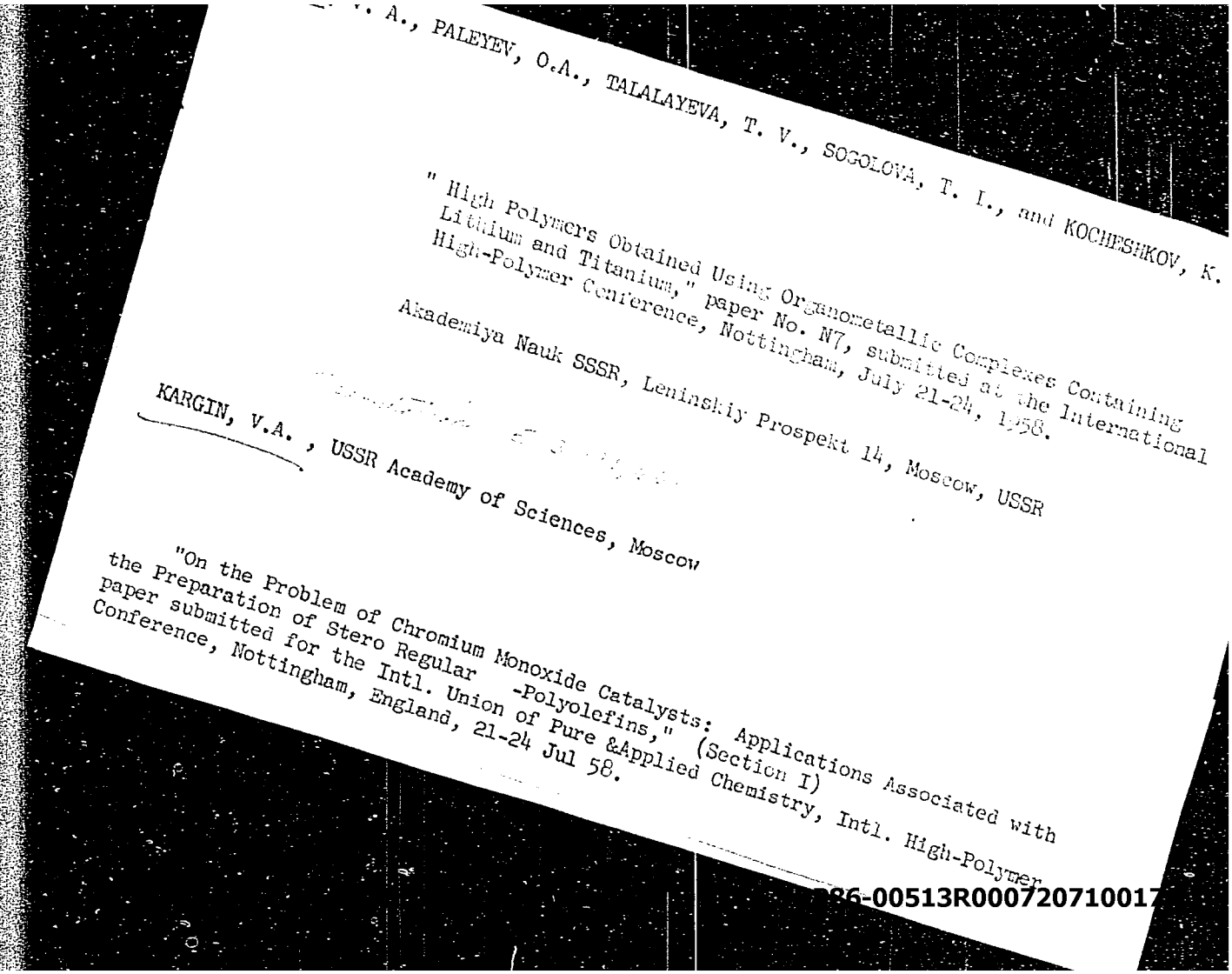
KARGIN, V. A., PALEYEV, O.A., TALALAYEVA, T. V., SOGOLOVA, T. I., and KOCHESHKOV, K. A.,

" High Polymers Obtained Using Organometallic Complexes Containing Lithium and Titanium," paper No. N7, submitted at the International High-Polymer Conference, Nottingham, July 21-24, 1958.

Akademiya Nauk SSSR, Leninskiy Prospekt 14, Moscow, USSR

KARGIN, V.A. , USSR Academy of Sciences, Moscow

"On the Problem of Chromium Monoxide Catalysts: Applications Associated with the Preparation of Stero Regular -Polyolefins," (Section I) paper submitted for the Intl. Union of Pure &Applied Chemistry, Intl. High-Polymer Conference, Nottingham, England, 21-24 Jul 58.



. A., PALEYEV, O.A., TALALAYEVA, T. V., SOGOLOVA, T. I., and KOCHESHKOV, K.

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15(6)

AUTHOR: Rebinder, P. A., Academician SOV/30-59-1-5/57

TITLE: New Trends of Colloid Chemistry (Novyye puti razvitiya kolloidnoy khimii)

PERIODICAL: Vestnik Akademii nauk SSSR, 1959, Nr 1, pp 44-51 (USSR)

ABSTRACT: At present, colloid chemistry plays an especially important part in political economy as it is a physical-chemical science concerning substances of modern engineering. It is of great practical importance that at present it is possible to carry on uninterrupted transitions from lyophobic to lyophilic systems. Thus, it is possible to obtain technically important substances with the required structural-mechanical properties. The theory of highly molecular substances and their solutions has developed into an independent branch of colloid chemistry. The vitality of modern colloid chemistry is proved by the fact that it produces many new independent branches of science. Further, the author describes the course of the 4th All-Union Conference of Colloid Chemistry which took place in Tbilisi on May 13-16, 1958. It was organized by the Otdeleniye khimiches-

V. A. Kargin, Z. Ya. Berestneva described the synthesis of aluminum-silicon jelly of crystalline structure.
V. N. Tsvetkov et al. examined the optical properties of macromolecular solutions and their structural peculiarities.
B. A. Dogadkin and collaborators reported on questions of compatibility of polymers and their solutions.
V. A. Kargin, P. I. Zubov and collaborators discussed the process of gelatin formation and its role in sticking processes.
S. M. Lipatov, S. I. Meyerson referred to the coincidental results of thermochemical and dilatometrical examination methods of the transition of gelatine jelly into a liquid solution at a rise in temperature.
A. I. Yurzhenko and collaborators (L'vov), P. M. Khomikovskiy reported on the clarification of polymerization processes in the state of dispersion.
B. Ya. Yampol'skiy, Ni Chu-ch'in, S. S. Voyutskiy, A. P. Pisarenko and collaborators examined the process of the influence of active fillers on the processes of structural formation of polymers.

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A. V. Dumanskiy with his school, A. A. Trapeznikov, G. V. Vinogradov and collaborators examined the properties of soap solutions in connection with their structural peculiarities and the theory of consistent lubricants.
The reports on questions of dispersion systems in polymers showed the utility of a combination of problems of colloid chemistry and the physical chemistry of polymers. The results of the Conference indicate that, besides limited consultations on individual scientific problems, comprehensive congresses are also useful and necessary, uniting the investigators and comprising the results of achievements in wide fields of science. There is 1 Soviet reference.

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of spontaneous dispersion of solid bodies, especially metals, ... the theoretical criteria in surface-active surroundings.
V. I. Likhtman reported on the appearance of adsorptive plastification of lead and tin at normal temperatures.
L. A. Kozarovitskiy and collaborators examined the influence of rheological properties of printing colors on their behavior in the printing process.
I. N. Vlodavets reported on the regulation of crystallization and coagulation structures in the production of best table-butter.

KARGIN, V.A.

SOV/58-59-8-17745

Translated from: Referativnyy Zhurnal Fizika, 1959, Nr 8, p 110 (USSR)

AUTHORS: Kargin, V.A., Sogolova, T.I.

TITLE: On the Chemical Flow of Polymers

PERIODICAL: In the symposium: Probl. fiz. khimii. Nr 1, Moscow, Goskhimizdat, 1958, pp 18-21

ABSTRACT: The process of the flow of structured polymers, which is called chemical flow, is explained by breaks in the chemical bonds of the molecular network under the influence of sufficiently great forces. As a result of the fact that the process of flow is in this case accompanied by breaks and recombinations of the molecular chains, the possibility arises of regulating the molecular weight of the polymer in the process of its remaking by means of introducing into the polymer substances which destroy free radicals (in order to reduce the molecular weight) or substances which can be polymerized and which can build up new chains at the broken extremities of the macromolecules. The processes of the mechanical breaking and recombination of chemical bonds explain the mechanism of the percussion compression of polymers and lead to the possibility of producing materials which do not flow under ordinary circumstances.

A.N. Genkin

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SOV/81-59-20-73661

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 20, pp 548 - 549 (USSR)

AUTHORS: Kargin, V.A., Taubman, A.B., Yanova, L.P., Belyayeva, Z.F.

TITLE: The Effect of Ionizing Radiation[1] on the Properties of Copolymers[1] of Vinylchloride and Vinylidenechloride

PERIODICAL: V sb.: Deystviye ioniziruyushchikh izlucheniy na neorgan. i organ. sistemy. Moscow, AS USSR, 1958, pp 325 - 332

ABSTRACT: The gas penetrability and the mechanical properties of the copolymers of vinylchloride (I) and vinylidenechloride (II) have been studied in connection with the changes of their amorphous-crystalline state and microstructure as results of an irradiation process. Films of amorphous polyvinylchloride (III) and copolymers containing 13 (IV), 60 (V) and 75% (VI) of crystallizing component of II were subjected to X-ray irradiation (dose intensity 1.8×10^{16} ev/cm^{3}sec). The diffusion gas penetrability (DG) of the samples increases from III to VI, because the accumulation of crystalline sections in the co-polymer increases its microdefects. The DG coefficient of the samples III and IV passes through a maximum with an increase in the dose. In

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SOV/81-59-21-77229

Translation from: Referativnyy zhurnal, Khimiya, 1959, Nr 21, pp 563 - 564 (USSR)

AUTHORS: Tsetlin, B.L., Zaytseva, N.G., Korbut, V.M., Kargin, V.A.

TITLE: The Action of Ionizing Radiation on Polymer Glass

PERIODICAL: V sb.: Deystviye ioniziruyushchikh izlucheniy na neorgan. i organ. sistemy, Moscow, AS USSR, 1958, pp 362 - 375

ABSTRACT: The effect of irradiation of polymers by fast electrons and X-rays on their thermomechanical properties and resistance has been investigated by experiment, and the process of formation of dendritic cracks and gas bubbles during irradiation has also been studied. The following samples were investigated: Polystyrene, non-plasticized polymethylmethacrylate, polymethylmethacrylate containing 6% dibutylphthalate, the copolymer of methylmethacrylate with isobornyl methacrylate, the copolymer of methylmethacrylate and methacrylic acid, poly- α -chloroacrylate, poly-n-dichlorostyrene and polytrifluorochloroethylene. It has been established that in polystyrene the process of structuralization takes place, whereas in all other polymers destruction is observed which is accompanied by the reduction of the flow temperature and the

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AUTHORS: Kargin, V. A., Member, Academy of Sciences, USSR, Lastovskiy, R. P., Professor, Matveyeva, T. A. SOV/64-58-5-1/21

TITLE: The Analysis and Purification of Substances by Means of New Methods of Electro-Dialysis (Analiz i ochistka veshchestv pri pomoshchi novykh metodov elektrodializa)

PERIODICAL: Khimicheskaya promyshlennost', 1958, Nr 5, pp. 261 - 267 (USSR)

ABSTRACT: In the introduction an electro-dialyzer according to Pauli (Ref 1) and the principles of the electro-dialysis itself are outlined. In this case the method of high-voltage-electro-dialysis was applied by which a five-chamber-electro-dialyzer was constructed which operated with a voltage of 300 V between the lateral- and auxiliary chambers and with a potential difference of 1500-1800 V between the lateral chambers, so that a considerable improvement of the purification of weak electrolytes was achieved. In order to increase the sensitivity of the method in the separation of insoluble substances, a so-called "stream of ions " is introduced. With this kind of electro-dialysis the basic substance remains unaffected, whereas the admixtures undergo a chemical modification. For this

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purpose the schedule of operation was slightly re-arranged and TiO_2- and SiO_2 samples of iron and heavy metals as well as cellulose were purified by SiO_2. The results are given in a table. A schematical drawing of a three-chamber-electro-dialyzer is given for the purification of non-electrolytes of salts and it is said that thicker membranes are employed with a higher electrolytic resistance and resistance of diffusion, because the speed of purification will be increased and diffusion losses will be reduced. In addition tests were carried out with a 5-chamber-electro-dialyzer to purify water by applying radioactive isotopes to check the quality of the working power. A graph of a multichamber-dialyzer is given with a description of the operating characteristics as well as a graphic representation of the pH-distribution in chambers; it is pointed out that a concentration and a determination of the admixture is possible up to quantities of from 0,01 - 0,00001%. Finally a detailed description is given of the working technique for analyses of substances according to the method of electro-dialysis as well as for the purification of substances and it is found that high-voltage-dialysis serves for the extraction of extremely

The Analysis and Purification of Substances by Means of New Methods of Electro-Dialysis SOV/64-58-5-1/21

pure to spectroscopically pure substances, for the extraction and for the concentration of precious admixtures, for the purification of electrolyte contaminations and for the separation of some cation-compounds. There are 8 figures, 12 tables, and 6 references, 5 of which are Soviet.

ASSOCIATION: Vsesoyuznyy nauchno-issledovatel'skiy institut khimicheskikh reaktivov(All-Union Scientific Institute for the Research of Chemical Reagents)

1. Electrolytes--Purification 2. Materials--Separation
3. Materials--Analysis 4. Electrical equipment--Performance

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Kargin, V. A.

Category : Chemical Technology. Electrochemical Industries. Electroplating. Galvanic Cells. H-12

Abs. Jour : Ref Zhur-Khimiya, No 14, 1959, No 50214

Author : Kargin, V. A.; Lastovskiy, R.P.; Matveyeva, T.A.

Institute :

Title : Analysis and Purification of Substances with the Aid of New Electrodialysis Methods

Orig Pub. : Tezhka prom-st, 1958, 7, No 11, 12-18

Abstract : No abstract.

Card: 1/1

Country : GDR

H-12

The Structure of Gels. 12. The Preparation of Gels From Co-Polymer Solutions of Methyl Methacrylate and Methacrylic Acid

sharp increase of the deformation. An addition of 2 and 3 % of SrO deflects the deformation curve to higher temperatures, and an addition of 4 % changes the form of the curve. In the studied solution, 4 bonds are formed per every 1,000 links in the presence of 2 % SrO. This is more than the number theoretically calculated. This is due to the formation of bonds other than the chemical salt type of bonds.
There is 1 graph, 1 table, and 7 references, 4 of which are Soviet, 2 English, and 1 American.

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva (Physical-Chemical Institute imeni L.Ya. Karpov, Moscow)

SUBMITTED: June 25, 1957

1. Gels--Structure 2. Gels--Preparation 3. Methyl methacrylate --Applications 4. Methacrylic acid--Applications

AUTHORS: Proshlyakova, N.F., Zubov, P.I., Kargin, V.A.

TITLE: The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals (Stroyeniye studney. 13. Issledovaniye svoystv studney sopolimera metilmetakrilata i metakrilovoy kisloty, soderzhashchikh odnovalentnyye metally)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol XX, Nr 2, pp 202-206 (USSR)

ABSTRACT: In the study of the properties of copolymer solutions, the effect of additions which do not cause chemical bonds between the molecules has been investigated. These additions (NaOH, KOH, TlOH, and ammonia) lead to gel formation at room temperature. The copolymer solution used in the mixture was methyl methacrylate and methacrylic acid in the concentration 4.5 g/ 100 ml with cyclohexanon and ethyl alcohol in the ratio 4 : 1. The deformation developing in 10 sec at a stress of 0.5 g/cm^2 was measured. The introduction of NaOH deflects the curve to higher temperatures. The comparison of figure 1 and 2 shows that the character of the deformation curve is not changed with the increase

The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals

of the polymer solution concentration. Figure 3 shows that the deformation is dependent on the stress within the limits 0.25 to 25 g/cm^2. Experimental facts demonstrate that the mentioned solutions have properties which are characteristic for elastic systems. The formation of chemical bonds between the molecules is excluded. The cause leading to the formation of a structural network of the gel is the non-chemical interaction of polar salt groups. The deformation of the concentrated gel, containing 15 % caustic soda depending on the temperature at various deformation speeds, is shown in figure 6. The properties of gels of various concentration prepared in the presence of NaOH, and of diluted copolymer solutions, are similar to the properties of gelatine gels and solutions.
There are 9 graphs and 5 Soviet references.

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69-58-2 -13/23

The Structure of Gels. 13. Investigation of the Properties of Gels of the Co-Polymer Methyl Methacrylate and Methacrylic Acid Containing Monovalent Metals

ASSOCIATION: Fiziko-khimicheskiy institut imeni L.Ya. Karpova, Moskva (Physical-Chemical Institute imeni L.Ya. Karpov, Moscow)

SUBMITTED: June 25, 1957

1. Gels--Structure 2. Gels--Properties 3. Methyl methacrylate --Applications 4. Methacrylic acid--Applications

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69-20-3-13/24

AUTHORS: Kargin, V.A.; Plate, N.A.; Dobrynina, A.S.

TITLE: Some Properties of Block Copolymers on the Base of an Epoxide Resin and Butadiene Nitrile Rubber (O nekotorykh svoystvakh blok-sopolimerov na osnove epoksidnoy smoly i butadiyennitril'-nogo kauchuka)

PERIODICAL: Kolloidnyy zhurnal, 1958, vol XX, Nr 3, pp 332-337 (USSR)

ABSTRACT: Block copolymers were produced by cold mastication of epoxide resin and butadiene nitrile rubber. The epoxide resin ED-15 and the butadiene nitrile rubber SKN-26 were mixed in the ratios 5:1; 2:1; 1:1; 1:2; 1:5 and processed for 5-7 minutes at room temperature in a nitrogen atmosphere. The thermo-mechanical properties of the copolymer were compared with those of its components. Figures 2, a and b, show that the thermomechanical properties in both substances are very similar. The temperature of vitrification is somewhat increased in the mixtures 1:1 and 2:1. The modulus of the highly-elastic state is increased in the copolymer, i.e. the rubber SKN-26 is toughened during mastication. During mastication the block copolymers take up more rubber compared with the initial components. Although the resin content is 39%,

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Some Properties of Block Copolymers on the Base of an Epoxide Resin and Butadiene Nitrile Rubber

the produced copolymers have similar thermomechanical properties to rubber. They maintain their high-elastic properties within a broad temperature range. The mechanical properties of the block copolymers of the resin ED-15 and the rubber SKN-26 are an addition of the properties of the individual components.
There are 6 graphs and 13 references, 4 of which are Soviet, 7 English, 1 German, and 1 French.

ASSOCIATION: Moskovskiy gosudarstvennyy universitet imeni M.V. Lomonosova, Khimicheskiy fakul'tet (Moscow State University imeni M.V. Lomonosov, Department of Chemistry)

SUBMITTED: December 10, 1957

Card 2/2 1. Rubber—Copolymerization—Properties—Analysis

SOV/69-20-6-3/15

AUTHORS: Berestnev, V.A., Gatovskaya, T.V., Kargin, V.A., Yaminskaya, Ye.Ya.

TITLE: Studies of the Physical-Chemical Properties of Cord Fibers (Izucheniye fiziko-khimicheskikh svoystv kordnykh volokon). 1. The Heat Effects of Dissolution of Capron Fibers (Teplovyye effekty rastvoreniya kapronovogo volokna)

PERIODICAL: Kolloidnyy zhurnal, 1958, Vol 20, Nr 6, pp 694-696 (USSR)

ABSTRACT: The microstructure of cord fibers and their changes have been investigated by thermodynamical methods. The table shows that the decrease in heat effects during heating in water is different for stretched and unstretched specimens. The difference is 0.77 kcal/g or 25% of the total heat effect. The dissolution heat decreases sharply during heating of capron fibers in formic acid which is explained by an increase in crystallinity of the polymer. Repeated stretching has no effect on the heat of dissolution. The dissolution heat of a rolled specimen is 24.5% higher than in initial specimens. Cord fatigue is due to macrodefects in the fiber. There is 1 set of photos, 1 table, and 4 Soviet references.

Card 1/2

KARGIN, V. A.

AUTHORS: Lipatov, Yu. S., Kargin, V. A., Slonimskiy, G. L. 76-1-19/32

TITLE: An Investigation of Orientation in High Polymers (Issledovaniye oriyentatsii v vysokopolimerakh)
III. The Effect of Orientation on the Vitrification Temperature of Amorphous Polymers (III. Vliyaniye oriyentatsii na temperatury stekloyaniya amorfnykh polimerov)

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ABSTRACT: In order to determine in what respect the softening temperature of the orientated films varies in comparison to the non-orientated ones, the shrinkage temperatures of orientated and non-orientated polystyrene samples (as an example of a polymer, about which literature data are available) and polymethylmethacrylate samples (about which no data are known) were investigated here. Under assumption that the effect of interior stresses upon the softening temperatures is analogous to the effect of the exterior stresses, the softening-(shrinkage-) temperatures of films with frozen-up interior stresses here were compared to the temperatures at the beginning of deformation of the non-orientated films under influence of stresses, which are according to their quantity near the interior stresses of the samples of orientated polymers. The heating of the orien-

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tated films at a given deformation (4-12 hours at 120°C) for the purpose of decrease of the interior stresses at the expense of the relaxation caused the increase of the softening temperature up to 98 - 100°C in the case of films, which were expanded up to the relative expension of 2000-3000 % at a stress of the order of magnitude of 300-500 g/mm^2. It is shown that in the case of almost equal stresses the softening temperature of the non-orientated sample is essentially lower. If this temperature is extrapolated for the zero-value of the stress, a softening temperature of 85-90°C is obtained, the fact of which is in agreement with the data from other publications for polystyrene. The temperature for the softening of orientated polymethylmethacrylate amounted to 84-87°C, whilst that one of the isotropic sample showed 98°C. Thus, the softening temperatures of the orientated samples with great interior stresses coincide with those ones of the isotropic samples with very small stresses, whilst in polymethylmethacrylate such a phenomenon does not occur. Without doubt, this fact shows a different process during the vitrification of these polymers. The vitrification of the polymer is determined by two causes: 1.) Increase of the intermolecular interaction in the case of a temperature drop, and 2.) increase of the intra-molecular interaction. Both effects

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